JAI NARAIN VYAS UNIVERSITY JODHPUR



<u>2016 - 2021</u>

1.3.4 Percentage of students undertaking field projects / research projects / internships (Data for the latest completed academic year)

1.3.4.1: Number of students undertaking field project or research projects or internships

JNVU/SSR/2016-21/ 1.3.4 & 1.3.4.1

SAMPLE DOCUMENTS

JNVU/SSR/2016-21/ 1.3.4 & 1.3.4.1



Certificate of Internship

This is to certify that

DEEP CHAND CHOUDHARY

From M.B.M Engineering College, Jodhpur

has Successfully Completed online Internship on SolidWorks from

10th May2021 to 24th June 2021.

We wish all the best for his future endeavors.

Centre Head



mannit

Training Coordinator

CADD Centre Training Service Private Limited

www.caddcentre.com

Franchisee: CREATIVE DESIGN & CONSULTANCY P.No -11 Shastri Nagar, Ajmer (Raj.)305001 Ph. 0145-2625553, 9351651101 E-mail : rj.ajmer@caddcentre.com





Internship Certificate

This is to certify that Mr / Ms Deep Jansari (VT20212630) has successfully completed

internship program on Logistics Optimization Services

under the guidance of Asitkumar Niranjanbhai Shukla (Manager, PSD).

The duration of this project was from 1st July 2021 to 15th August 2021.

The internship on evaluation fulfils all the stated criteria and student's findings are his/her original work.

I hereby certify his/her work excellent/good/satisfactory to the best of my knowledge

We wish him all the best for his future endeavours.



productivity

Rama Shanker

Rama Shanker Singh Chief Productivity Services Department



Certificate of Training

Ganesh Kumar Nagal,

student of MBM Engineering College, Jodhpur, has successfully completed a eight weeks online training on **Ansys**. The training consisted of Introduction to Finite Element Analysis (FEA), Understanding Concepts at Work & Installing Ansys, Introduction to Ansys Software, Static Structural Analysis, Modal, Thermal, & Buckling Analysis, Case Studies and Final Project modules. In the final assessment, Ganesh Kumar scored 83% marks. We wish Ganesh Kumar all the best for the future.

avors

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-06-11

Certificate no. : EE095015-6208-7110-DC9B-183843623ABA

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate



Certificate of Training

Gyanprakash

from MBM Engineering College, Jodhpur, Rajasthan, has successfully completed a six weeks online training on**3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules.

We wish Gyanprakash all the best for the future endeavours.

aves

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-08-19

Certificate no.: B050874E-JV7A-B57A-2803-67DB26A9IS87

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate

Ambuja Cement

Ref No. ACL/HR/2021 September 9, 2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Khushbu Barmera D/o Sh. Hansraj Barmera student of B. Tech 3rd Year (Branch - Production & Industrial) of M.B.M. Engineering College, Jodhpur (Rajasthan) has completed her Summer Training in our organisation from 5th July, 2021 to 20th August, 2021.

During the above project, we found her a sincere and obedient candidate.

We wish her all the success in her future endeavors.

Ambuja Cements Ltd. (Unit –Rabriyawas)

S.K.Singh General Manager (HR)



Ambuja Cement Ltd. Unit-Rabriyawas

Works : PO Rabriyawas, Tehsil - Jaitran, Distt. - Pall, Rajasthan-306709



Certificate of Training

Kshitij Saren

from M.B.M. Engineering College, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Kshitij scored 82% marks. We wish Kshitij all the best for the future endeavours.

aus

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-08-01

Certificate no. : 7EB05EE0-4577-FA18-4C7B-E8CAA8B81F2F

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate



Letter No. TSLP/L&D/AUG-SIP35 Date: 31/07/2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Kumar Keshav Ram Narayan** (ROLL NO.- 19UPIE1308), a student of of Faculty of Engineering, MBM Engineering College, Jai Narayan Vyas University, Jodhpur has undergone **Summer Internship Training** in Tata Steel Long Products Limited, from **31-05-2021** to **20-07-2021**.

During this period, he has successfully completed a project on Assessment of Ways to Control Sulphur in DRI fines While Optimizing Dolomite Consumption.

Mr. Kumar Keshav Ram Narayan was sincere during his internship training and has shown commitment in completing his project assignment and fulfill the company's norms of attendance, safety and discipline.

We wish success in his future endeavour.

Phandha

Ranjeet Chaudhary Learning & Development

TATA STEEL LONG PRODUCTS LIMITED

(Formerly known as Tata Sponge Iron Limited) PO Gamharia, Dist Saraikela-Kharsawan, Jamshedpur 832 108 Jharkhand India Tel 91 657 7102265 e-mail animesh_parashar@tatasteellp.com CIN-L27102OR1982PLC001091 Registered Office PO Joda Dist Keonjhar Odisha758 034 India



Certificate of Training

Lalit Parihar

from MBM Engineering College, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Lalit scored 88% marks. We wish Lalit all the best for the future endeavours.

aus

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-07-09

Certificate no.: 94565FC0-48DD-34F8-CB9D-406E5E4C7C73

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate



Ambuja Cement Limited

Summer Internship report

(05/07/2021 - 20/08/2021)



Department of Production and Industrial Engg.,

MBM Engineering College,

Jodhpur,Rajasthan

Submitted To:

Prof. Milind Kumar Sharma

(Head of Department)

Production and Industrial Engg.

Submitted By:

Lucky Jarolia

(B.E. Third Year, P&I)

Ambuja Cement

Ref No. ACL/HR/2021 September 9, 2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Lucky Jarolia S/o Sh. Dhanpat Singh student of B. Tech 3rd Year (Branch - Production & Industrial) of M.B.M. Engineering College, Jodhpur (Rajasthan) has completed his Summer Training in our organisation from 5th July, 2021 to 20th August, 2021.

During the above project, we found him a sincere and obedient candidate.

We wish him all the success in his future endeavors.

Ambuja Cements Ltd. (Unit –Rabriyawas)

AQuy S.K.Singh General Manager (HR)



Ambuja Cement Ltd. Unit-Rabriyawas

Works : PO Rabriyawas, Tehsil - Jaitran, Distt. - Pali, Rajasthan-306709 Tel. : 02939-288011-18, Fax : 02939-288030 CIN : L26942GJ1981PLC4717 Website : www.ambujacement.com

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Preface

Every student of bachelor of engineering and technology in Production and Industrial engineering, has an essential requirement to do 45 days of internship in any of the well reputed organization.

The purpose of this program is to acquaint the students with practical applications of theoretical concepts taught to them during conduct of their course.

I wish to express my sincere gratitude to Mr. S.K. Singh, General Manager (HRD) for providing me an opportunity to do my internship and project work in "AMBUJA CEMENT LIMITED."

I also wish to express my gratitude to the officials and other staff members of Ambuja Cement Limited who rendered their help during the period of my internship.

I also thank the head of placement cell Prof. A.K. Verma and Head of P&I department Prof. Milind Kumar Sharma for providing me the opportunity to embark on this project.

It was really a nice experience to have a close comparison between theoretical concept and practical applications in industry. This report depicts all the structural and technical study and analysis of Ambuja Cement Ltd. The outcomes of my analysis is summarized in shape of internship contents of report shows the detail of sequence of these.

About Ambuja Cement Limited

Ambuja Cement is one of the leading players in the Indian cement industry and is trusted for its tailor-made product portfolio, suitable for diverse Indian climatic conditions. Our sustainable operations and initiatives help advance the Company's philosophy of contributing to societal well-being.

Plant Details:

- Plant Name Ambuja Cement Plant Rabriyawas Rajasthan
- Company Ambuja Cements Limited (ACL)
- Plant Type Cement Plant
- Annual Production Capacity 1.8 million tonnes of cement
- Manufacturing Products Ambuja Cement, Roof Special, Cool Walls, Buildcem, Powercem and so on.
- Owner of Cement Plant Ambuja Cement Limited (ACL)
- Company Type Public limited company
- Shareholders ACL (54%) and Holcim Group (46%)
- Plant Status Operational
- Contact Number +91 (2939) 288011
- Email shares@ambujacement.com
- Website www.ambujacement.com
- Address Rabriyawas, Jaitaran Tehsil, Pali District, Rajasthan
- Pin Code 306709
- Location Coordinates 26.297827, 74.126598
- Nearest town Jaitaran
- District Pali, Rajasthan

Management

| Name | Designation |
|-----------------------|--------------------------------|
| Christof Hassig | Director |
| Jan Jenisch | Vice Chairman |
| Mahendra Kumar Sharma | Director |
| Martin Kreigner | Director |
| N S Sekhsaria | Chairman |
| Nasser Munjee | Director |
| Neeraj Akhoury | Managing Director & CEO |
| Omkar Goswami | Director |
| Praveen Kumar Molri | Director |
| Rajani Kesari | Chief Financial Officer |
| Rajendra P Chitale | Director |
| Rajiv Gandhi | Co. Secretary & Compl. Officer |
| Ramanathan Muthu | Director |
| Ranjit Shahani | Director |
| Shailesh Haribhakti | Director |
| Shikha Sharma | Director |
| Then Hwee Tan | Director |

ACL has grown manifold over the past decade. Its current cement capacity is 27.25 million tonnes. The Company has 5 integrated cement manufacturing plants and 8 cement grinding units across the country. ACL enjoys a reputation of being one of the most efficient cement manufacturers in the world. Its environment protection measures are considered to be on par with the finest in the country. It is also one of the most profitable and innovative cement companies in India. ACL is the first Indian cement manufacturer to build a captive port with three terminals along the country's western coastline to facilitate timely, cost effective and environmentally cleaner shipments of bulk cement to its customers. The Company has its own fleet of ships. ACL has also pioneered the development of the multiple, bio-mass, co-fired technology for generating greener power in its captive plants.

History of Ambuja Cement

1981- The Company was Incorporated on 20th October, as Ambuja Cements Pvt. Ltd. It was jointly promoted by Gujarat Industrial Investment Corporation Ltd. (GIIC) and N.S. Sekhsaria and his associates, Vinod K. Neotia and Suresh Mulani, for setting up a cement project in the joint sector. The Company was converted into a public limited company on 19th March, 1983 and its name was changed to Gujarat Ambuja Cements, Ltd., on 19th May, 1983.

- The Company's object is to manufacture cement.

- The Company adopted the latest dry process precalcination technology incorporating five stage preheater for the main pyro processing system of the cement plant. For grinding the raw material, the Company undertook to instal the latest air swept roller mills of polysius design which were extremely energy efficient.

- A computerised process control system with field instruments supplied by Larsen & Tourbo was also being installed to give consistently high quality cement with maximum productivity.

- In addition, electronic packing machines were being obtained from Haver & Boecker, West Germany, and reverse air baghouse equipment from Zurn Industries, USA.

- The company entered into an agreement with Krupp Polysius AG, (KP) West Germany, for supply of plant, equipment and service for the project, KP agreed to supply raw material and coal grinding vertical roller mills, homogenising and kiln feed, burning, cooling and coal firing equipment and pneumatic transport pumps.

- KP have a collaboration agreement with Buckau Wolf India, Ltd. who are supplying the balance items of the main plant as per KP design. The scope of the agreement with KP provides for complete engineering of the plant, technical documentation and information and supervision of erection and commissioning of the project.

1983 - All shares subscribed for by signatories to the Memorandum of Association, promoters, etc.

1985- A letter of intent was received to increase the installed capacity from 7,00,000 tonnes to 14,00,000 tonnes per annum.

- 146,44,500 No. of equity shares issued at par out of which the following shares were reserved for firm allotment: 38,24,448 shares to GIIC; 21,20,000 shares to overseas companies of non-resident Indian promoters on repatriation basis and 15,50,052 shares to N.S. Sekhsaria,Vinod K. Neotia and their associates.

- Out of the balance 71,50,000 shares, 28,60,000 shares to non-resident Indians with repatriation rights and 8,75,500 shares to employees (including Indian working directors)/workers and business associates of the Company were reserved for preferential allotment. The remaining 34,14,500 shares were offered for public subscription during November. Out of the oversubscription, 33,50,000 shares were retained and allotted to the public.

1986- 20,00,000 No. of equity shares issued at par of which 2,00,000 shares allotted to private promoters and their associates and the balance of 18,00,000 shares offered and allotted to the equity shareholders as rights in prop. 1:1. **1988**- Production declined marginally to 8,02,301 tonnes due to heavy rains in July-August 1989 coupled with flash floods on 16th July.

1989- The 12.6 MW diesel generating sets which were imported during 1988-89 were commissioned during the year.

1990- Necessary approvals were received for setting up another cement plant with 1 million tonne capacity per annum at village Suli, Tehsil Arki, District Solan of Himachal Pradesh.

1991- In order to meet long-term working capital requirements, the Company issued 10,00,000 - 17.5% secured redeemable non-convertible debentures on private placement basis. These debentures would be redeemed in three equal annual instalments commencing at the end of the 6th year from the date of issue of the debentures, at a prem. of 5% of the face value of the debentures.

- In order to part finance its expansion projects, the Company proposed to issue 52,62,500 No. of equity shares of Rs.10 each at a prem. of Rs.190 per share. Out of the total issue, 50,00,000 shares were to be offered to the existing equity shareholders of the Company as rights in the prop. of 1:4 and the balance of 2,62,500 shares were to be

offered to the employees, directors and the business associates of the company.

- In order to part finance its expansion projects, the Company also proposed to issue 52,62,500 - 17.5% secured redeemable non-convertible debentures aggregating to Rs.210.50 crores. Out of the total issue, 50,00,000 debentures were to be offered to the equity shareholders of the Company on rights basis in the prop. of 1 debenture for every 4 equity shares held and the balance of 2,62,500 debentures were to be offered to the employees, directors and business associates of the Company.

- Each non-convertible debenture would be attached with a detachable warrant and the holder of one such warrant would be entitled to apply for and be allotted one equity share of the Company at a price of Rs.300 per equity share (Rs.10 towards face value and Rs.290 as prem.).

- The warrant holders at the time of exercising their right/option to subscribe for their equity shares entitlement would have further option either to pay a price of Rs.300 per share of the Company or to surrender the equivalent number of debentures as subscription for allotment of equity shares.

- GACL Finance Ltd., Concrete Investments, Ltd., and Indo Nippon Special Cements, Ltd. are the subsidiaries of the company.

1992

- The Company undertook bulk cement transportation, by sea, to the major markets of Mumbai, Surat and other deficit zones on the West Coast. Transportation was to be carried out by three specially designed ships. The units bulk terminal at Kodinar and one at New Mumbai was completed and work on the third terminal near Surat began. **1993**

- 51,60,165 rights equity shares allotted at a prem. of Rs.190 per share (49,66,815 shares, prop. 1:4; 90,850 shares to employees and 1,02,500 shares to Associates); 1,10,281 shares of Rs.10 each allotted at a prem. of Rs.215 per share on exercise of warrants by warrant holders.

1994- The Company's muller location 1.5 million tonne cement project with clinkeriation facility at site in H.P and grinding facility both at Suli & Ropar in Punjab was commissioned. Land was acquired at Sahranpur to serve as another site for grinding cement.

- The Company also undertook to set up a new unit, `Gajambuja Cement' with an installed capacity of 9.4 lakh tonnes, at the existing premises. The kiln was fired on 1st March 1993 and the unit produced its first batch of clinker on 4th March, 1993.

- The Company undertook to set up the third 1 million tonne cement plant at Ambujanagar. Orders for plant and machinery were placed and the plant was expected to be commissioned by December 1996. This will increase the company's total cement capacity to 4.5 million tonnes.

- 45,65,044 shares allotted on conversion of warrants. 12,21,994 allotted on conversion of aurobonds. 375 rights shares kept in abeyance allotted. 3,02,19,749 bonus shares issued in prop. 1:1 10,00,000 shares allotted to IFC Washington. 4,404 rights shares kept in abeyance allotted.

1995 - The Company proposed to install one more cement mill at Himachal plant.

- 11,251,829 shares allotted on optional conversion of FCCBs. 7,724 Rights shares kept in abeyance allotted. 7,350 shares allotted on conversion of tradeable warrants.

1996- Two more ships `Ambuja Keerti' and `Ambuja Shakti' were added to the Fleet. The Company has submitted a proposal to revive Modi Cements Ltd. to IDBI during the year.

- Another 19724 No. of equity shares allotted on conversion of warrants.

1997- 100,000,000-10% non-convertible redeemable pref. shares of Rs. 10 each allotted and 30,000,000-12.75% non-convertible redeemable pref. shares of Rs. 10 each redeemed.

- Gujarat Ambuja Cements Ltd.'s (GACL) Kodinar plant is set to commence commercial production with an enhanced capacity by mid-April.

- Gujarat Ambuja Cement Ltd. has offered to set up a multi-crore cement plant in Jammu and Kashmir.

- Gujarat Ambuja Cement Ltd. (GACL) was set up in 1981 as a joint sector company, promoted by Narottam

Sekhsaria and Gujarat Industrial Investment Company (GIIC). Its cement plant which was commissioned in 1985 was set up in technical collaboration with Krupp Polysius,Germany, Bakau Wolf and Fuller KCP.

- Gujarat Ambuja Cement Ltd. (GACL) is setting up two new units with a capacity of 1.5 m.t. each through its subsidiaries.

- The company has signed a memorandum of understanding (MoU), with the promoters of Modi Cement to take control of the sick company and has prepared a revival proposal to be submitted to the Board for Industrial and Financial Reconstruction (BIFR).

1998 - Gujarat Ambuja Cements to set up a \$20 million clinker Grinding unit in Sri Lanka.

1999- Gujarat Ambuja is proposing to set up a greenfield cement plant with a six million tonne capacity in phases in Andhra Pradesh.

- Gujarat Ambuja is setting up a 0.50 MT bulk terminal and a packaging facility at Tuticorin for Rs 16 crore to increase its presence in the south, especially Tamil Nadu.

- Maratha Cements Ltd, a wholly-owned subsidiary of Gujarat Ambuja Cements is to be amalgamated with the latter.

- The company has proposed a bonus shares in the ratio of 1:1.

2000- Cement giants Larsen & Tubro (L&T) and Gujarat Ambuja Cements have entered a unique agreement to reduce transportation costs in despatching bulk cement in Gujarat.

- The Company has entered the fray for setting up a slag cement unit near the integrated steel complex of Jindal Vijayanagar Steel Ltd. in Karnataka.

- The Company has entered into a contract with a Soinhalese firm, Mahaveli Marine Cement, to supply around 2.5 lakh tonnes of cement annually.

- Eastern Ambuja Cement, a 92-per cent subsidiary of Gujarat Ambuja Cement, is in talks with Orissa-based Shiva Cement for a possible joint venture.

- The Company has kickstarted its operations in Sri Lanka with the setting up of a cement terminal in the port of Galle, in the south of the island country.

- Ambuja Cement Eastern, a subsidiary of Gujarat Ambuja Cements is making a preferential allotment of equity to its promoters to mop up Rs 30 crore to part-finance its Rs 130-crore expansion project.

- ICRA has downgraded the non-convertible debenture (NCD) programmes of the company.

- Fitch India has assigned a rating of Ind AAA to the Rs 50 crore NCD programme of the company.

2001

- The Company has completed the issue of FCCBs of about \$100 million issued in the international markets.

- Gujarat Ambuja Cements Ltd., the fourth largest cement maker in the country, has closed its issue of secured non-convertible debentures after raising the targeted Rs 200 crore.

- Gujarat Ambuja Cements Ltd is planning to issue fresh equity shares on a prefrential basis to non-promoter groups.

- Gujarat Ambuja Cements Ltd (GACL) has received Rs 200 crore from foreign equity investor, Warburg Pincus, as part of its proposed Rs 360-crore investment in the form of equity shares and convertible ants.

- The company will buyback shares worth Rs 50 crore at a maximum share price of Rs 170 per share through the open market route, it said. Gujarat Ambuja Cements has clocked a 112 per cent rise in net profit at Rs 53.23 crore during the first quarter of the financial year 2002-Commercial production commences at Gujarat Ambuja Cements Maratha Cement Works plant

-Board approves merger of Ambuja Cement Rajasthan with the company

-Mops up Rs 50 cr by issuing non Convertible Debentures (NCD)

-Allots 80 lacs warrants to Affinity Investments, an Affiliate of Warburg Pincus Equity Partners L.P

-Securities Appellate Tribunal (SAT) directs Sebi to examine Guj Ambuja deal for ACC stake

2003-SEBI finds no violation of Regulation 12 of the SEBI (Substantial Acquisition of Shares and Takeovers)

Regulation, 1997 by Gujarat Ambuja Cements Ltd. with regard to the ACC deal

-Raises \$80 million through External Commercial Borrowings (ECB)

2004-BIFR sanctions the rehabilitation scheme for merger of Ambuja Cement Rajasthan with Gujarat Ambuja Cements Ltd.

-Gujarat Ambuja Cements Ltd has informed that Shri NP Ghuwalewala has been appointed as the Wholetime Director of the Company at the Board meeting held today on June 28, 2004

2005- Gujarat Ambuja Cement Ltd - Issue of Bonus shares- Gujarat Ambuja gives Rs 25 lakh aid for quake victims-Ambuja Cements has given the Bonus in the Ratio of 1:2-Company has splits its Face value of Shares from Rs 10 to Rs 2

2006 - Holcim raises stake in Gujarat Ambuja Cements

- Gujarat Ambuja - Change in Accounting Year

2007 - Company name has been changed from Gujarat Ambuja Cements Ltd to Ambuja Cements Ltd.

2008 - Ambuja Cements Ltd has appointed Mr. Naresh Chandra as an additional director.

2009- The Company launched its knowledge initiative i.e. Ambuja Knowledge Center, to enable industry professionals get a first-hand feel of the world of cement and concrete. During the year, three centers became operational in the cities of Jaipur, Ahmedabad and Kolkata.

-Ambuja Cements - Grant of Stock Option under ESOS

2010- On 24th February 2010, Ambuja Cements Ltd (ACL) inaugurated its cement plant (grinding unit) at Dadri, Uttar Pradesh. Capacity: 1.5 million tonnes.- On 27 March, 2010, Ambuja Cements Ltd (ACL) inaugurated its cement plant (grinding unit) at Nalagarh, Himachal Pradesh. Capacity: 1.5 million tonnes.

- In December 2010, the Dadri Grinding Unit in its very first year of operation received the Integrated Management System (IMS) Certification, including ISO 9001:2008, ISO 14001:2004, and OHSAS 18001:2007 by BSI (U.K.).

2011-Completes 25 years of operation. Celebrates silver jubilee at all integrated plants.

- Achieves water-positive status, as certified by an independent foundation, Det Norske Veritas. Ambuja Cements gives back to the community double the amount of water the Company consumes at its facilities.

- Ambuja Cements Ltd has acquired 85% equity shares of Dang Cement Industries Pvt. Ltd., Nepal

- Ambuja Cements Ltd has acquired 60% equity shares from the existing promoters of Dirk India Pvt. Ltd.

2012 - Ambuja Cements announces Allotment of Shares under ESOS category.

- Ambuja presented 2 awards at the CII Sustainability Awards 2012 by Honorable President of India.

- Ambuja Cements Limited's (ACL) integrated plant unit at Chandrapur, (Maharashtra), the Maratha Cement Works (MCW) bagged the gold award for the best safety systems under the Large size category of the FICCI Safety Excellence System Awards 2012

2013-Ambuja Cement bagged the Asia's Most Promising Brand & Leader Award at the Asian Brand and Leadership Summit 2013

-ACL Rabriyawas was awarded "Energy Efficient Unit" during the 14th National Award for Excellencein Energy Management 2013

-Ambuja Cements has unanimously approved a proposal to first acquire a 24% stake Holcim

2014-Ambuja Cement Foundation - Chirawa has won the UNESCO supported Water Digest Water Award 2013-14 -Ambuja Cement Foundation - Bathinda won the NABARD 'Partnership Excellence Award' in the category of "Improving productivity of crops"

-Ambuja launched a premium quality cement product, AMBUJA PLUS in the state of Rajasthan.

-Ambuja launches AMBUJA PLUS in Gujarat

-Ambuja Cement has launched a new TV campaign after four years, focusing on social awareness.

2015-17-Ambuja Cement created another benchmark among cement industries in India, it obtained a whopping

4.03 times water positive factor

-Ambuja Cement won FICCI CSR award 2016 under 'Category 5 - Any Other' for its exemplary Water Resource Management Program

-Ambuja Cement conferred with the Bombay Chamber Civic Award for social development

-Ambuja Cement & ACC win prestigious accolades at CII-ITC Sustainability Awards 2016- Ambuja notches up a perfect score bags six prestigious accolades @ CII-ITC Sustainability Awards 2017

- Ambuja Cement wins two prestigious awards at NCB International seminar
- Ambuja Cement launches 'Ambuja Plus Cool Walls' in Surat
- 'Ambuja Plus Cool Walls' launched in Punjab
- Ambuja Manovikas Kendra bags 'Overall Championship Trophy' at Punjab State Special Olympic Games
- Ambuja Cement wins CII National Award for Excellence in Water Management
- Ambuja Cement bags Yes Bank's prestigious Natural Capital Award 2017

- Ambuja Compocem launched a superior composite cement product for better sustainability a first in the Indian cement industry

- Ambuja Cement a key partner in India's longest highway tunnel in Jammu & Kashmir

Competitors of company

| COMPANY | SYMBOL |
|------------------------------|--------|
| Ambuja Cements Ltd. | AMBCEL |
| ACC Ltd. | ACCLTD |
| Heidelberg Cement India Ltd. | MYSCEM |
| UltraTech Cement Ltd. | ULTCEM |

Yearly Expenditure vs income data

| Rs (in Crores) | | | | | |
|--------------------|----------|----------|----------|----------|---------|
| | Dec'20 | Dec'19 | Dec'18 | Dec'17 | Dec'16 |
| INCOME | | | | | |
| Net Sales Turnover | 11371.86 | 11667.88 | 11356.76 | 10446.85 | 9267.82 |
| Other Income | 372.00 | 426.52 | 374.98 | 359.09 | 576.23 |
| Total Income | 11743.86 | 12094.40 | 11731.74 | 10805.94 | 9844.05 |
| EXPENDITURE | | | | | |
| Stock Adjustments | 114.08 | 42.80 | -76.72 | -62.83 | -30.19 |

| Raw Material Consumed | 874.88 | 994.42 | 1013.08 | 909.33 | 776.68 |
|------------------------------|---------|---------|---------|---------|---------|
| Power and Fuel | 2251.91 | 2586.42 | 2548.99 | 2234.20 | 1831.96 |
| Employee Expenses | 668.78 | 672.63 | 679.57 | 661.37 | 593.72 |
| Other Expenses | 4815.61 | 5222.76 | 5300.38 | 4764.64 | 4412.96 |
| TOTAL EXPENSES | 8725.26 | 9519.03 | 9465.30 | 8506.71 | 7585.13 |
| Operating Profit | 2646.60 | 2148.85 | 1891.46 | 1940.14 | 1682.69 |
| EBITDA | 3018.60 | 2575.37 | 2266.44 | 2299.23 | 2258.92 |
| Depreciation | 521.17 | 543.83 | 548.09 | 572.92 | 850.13 |
| EBIT | 2497.43 | 2031.54 | 1718.35 | 1726.31 | 1408.79 |
| Interest | 83.05 | 83.52 | 82.33 | 107.19 | 71.48 |
| EBT | 2414.38 | 1948.02 | 1636.02 | 1619.12 | 1337.31 |
| Taxes | 624.28 | 419.48 | 19.06 | 369.55 | 367.22 |
| Profit and Loss for the Year | 1790.10 | 1528.54 | 1616.96 | 1249.57 | 970.09 |
| Extraordinary Items | .00 | .00 | -129.95 | .00 | .00 |
| Prior Year Adjustment | .00 | .00 | .00 | .00 | .00 |
| Other Adjustment | .00 | .00 | .00 | .00 | .00 |
| Reported PAT | 1790.10 | 1528.54 | 1487.01 | 1249.57 | 970.09 |
| | | | | | |

glossary: PAT- Profit After Tax

EBT – Earnings Before Tax

<u>EBIT</u> (earnings before interest and taxes) =Net Income+Interest Expense+Tax Expense

EBITDA-Earnings Before Interest, Taxes, Depreciation, and Amortization =Operating Profit +DE +AE where: DE=Depreciation expense, AE=Amortization expense

Vision and Mission

The bedrock of Ambuja's philosophy

VISION

To be the most sustainable and competitive company in our industry.



MISSION

To create value for all

- Delighted Customers
- Inspired Employees
- Enlightened Partners
- Energised Society
- Loyal Shareholders
- Healthy Environment



Organization Structure

General organization chart is a blue print of company organization. Anybody understands a position of employees. General organization structure process is very important and hard process.

We can understand an authority and responsibility of officers and employees. And also, general structure showed a relationship between officer to officer, employees to employees. And also shown a group activity, so best structure means a best result.

According to my observation, authority is in the hand of top-level management and responsibility rests with medium and low-level management.





Finance department hierarchy Chart:



Marketing Department hierarchy chart:



Organization Chart of Technical Management:



Production is the process where raw materials are converted into finished goods. All the processes are different for each product. Production means creation of utilities and covers all the activities of procurement, allocation and utilization of resource such as energy material etc.

Hence Ambuja Cement Rajasthan Limited is a very large company and creates many construction products, I was only focused with the main product of the company which is Portland cement. I will further explain all the processes used for cement production.

Manufacturing means to make semi-finished goods into finished goods and manufacturing process summation of all the steps making semi-finished goods into finished goods.

Every manufacturing firm should have sound manufacturing process to manufacture goods without sound. Manufacturing process, manufacturing cost will be directly reflect in the profit if the organization.

A cement is a binder, a substance that sets and hardens and can bind other materials together. The word "cement" traces to the Romans, who used the termopus caementicium to describe masonry resembling modern concrete that was made from crushed rock with burnt lime as binder. The volcanic ash and pulverized brick supplements that were added to the burnt lime, to obtain a hydraulic binder, were later referred to as cementum, cimentum and cement. Cements used in construction can be characterized as being either hydraulic non-hydraulic, depending upon the ability of the cement to be used in the presence of water (see hydraulic and non-hydraulic lime plaster). Non-hydraulic cement will not set in wet conditions or underwater, rather it sets as it dries and reacts with carbon dioxide in the air. It can be attacked by some aggressive chemicals after setting. Hydraulic cement is made by replacing some of the cement in a mix with activated aluminium silicates, pozzolanas, such as fly ash. The chemical reaction results in hydrates that are not very water-soluble and so are quite durable in water and safe from chemical attack. This allows setting in wet condition or underwater and further protects the hardened material from chemical attack (e.g., Portland cement).

The basic raw material required to produce cement are as follows:

- 1. LIMESTONE
- 2. RED CLAY
- 3. GYPSUM
- 4. COAL
- 5. FLY ASH
- 6. SILICA

According to the mode of preparing the raw mix four different processes can manufacture cement:

A. **Wet Process-** In this process, the raw meal is fed to the rotary kiln in wet slurry form. The moisture content of the slurry varies between 30- 40 % and hence relatively long kiln, generally with installations such as chains, segments or crosses, with or without slurry pre-heater, are used.

The fuel consumption is rather high (1350 - 1500 kcal / kg clinker), but the electrical energy consumption (in kWh / t) is less compared to dry grinding. The wet process is rarely used these days and the shift is towards dry process.

However, the application of this process becomes necessary when:

Raw materials contain components such as plastic clay, chalk with high moisture content, or carbonate sludge.

Wet beneficiation is necessary to upgrade the chemical characteristics of limestone

C. **Dry Process-** In the dry process, raw materials are ground in the dry state and the resultant raw meal fed to the rotary kiln. Dry process kiln can be of the following types as mentioned here

Long- dry kiln with internal / external heat exchanger Kiln with suspension pre-heater. Kiln with suspension pre-heater and precalciner.

| Dry process | | Wet process | | | |
|-------------|---|-------------|--|--|--|
| | This process is usually used when raw materials are very strong and hard. | | This process is generally used when raw materials are soft because complete mixing is not possible unless water is added. | | |
| ۵ | In this process, the raw materials are changed to powdered form in the absence of water. | | In this process, the raw materials are changed to powdered form in the presence of water | | |
| ۵ | Dehydration zone requires a somewhat shorter distance than wet process. | | Dehydration zone would require up to half the length of the kiln easiest to control chemistry & better for moist raw materials | | |
| | 74% of cement produced. | | 26% of cement produced | | |
| | kilns less fuel requirements | | High fuel requirements - fuel needed to evaporate 30+% slurry water- The kiln is a continuous stream process vessel in which feed and fuel are held in dynamic balance | | |
| • | In this process calcareous material such as lime stone (calcium carbonate) and argillaceous material such as clay are ground separately to fine powder in the absence of water and then are mixed together in the desired proportions. Water is then added to it for getting thick paste and then its cakes are formed, dried and burnt in kilns. | | In this process, raw materials are pulverized by using a Ball mill, which is a rotary steel cylinder with hardened steel balls. When the mill rotates, steel balls pulverize the raw materials which form slurry (liquid mixture). The slurry is then passed into storage tanks, where correct proportioning is done. Proper composition of raw materials can be ensured by using wet process than dry process. Corrected slurry is then fed into rotary kiln for burning. | | |

Advantages and disadvantages of WET and DRY process

In the drying section of wet process plant, there is weakening of bonds of the crystal lattice which accelerates clinker formation during burning. Wet process consumes less power during grinding. Dry process requires approximately 30 % more power. Quality of clinker in wet process is better due to better homogenization achieved in slurry raw meal, but now, by pneumatic blending, dry raw meal is also homogenized to the same degree. Proportioning of dry raw meal to required composition is easier than doing the same for moist, wet or plastic cake. Wet process plant requires 20 % more silo volume for slurry storage. Heat consumption foe wet process is higher (1350- 1500 kcal / kg clinker) whereas for the dry process it may vary from 720- 1100 kcal / kg clinker depending upon the type of kiln being used. There is a higher wear rate of equipment - kiln chains, liner plates etc. in the wet process.

Semi - wet Process

In the semi- wet process, the kiln is fed with raw meal in the form of wet cakes containing 15-20% moisture after partial dewatering of slurry by filtration. Heat consumption in this process is 1000 - 1200 kcal / kg clinker. This process has the advantage of partial fuel saving even wet grinding is resorted to due to the characteristics of the raw material. However, this has not been widely accepted in the industry due to additional energy consumption and high maintenance cost of slurry filtration unit.

Semi - dry Process

This process was especially evolved to counter the main drawback of the wet process i.e. high fuel consumption. In this process, the raw materials ground in dry condition are homogenized and then nodulised in a pan noduliser of dish or rotary type by adding controlled quantity of water (10- 12 %). Nodules thus produced are fed to the pyro- processing unit. This type of process can only be applied to raw materials having proper plasticity for producing nodules of adequate strength. It is generally adopted where alkali - content in raw materials and fuel is on the higher side and raw material properties exclude the preparation of raw- mix in the dry condition. The raw meal nodules are fed to the pyro- processing plants having either shaft kiln or short rotary kiln with traveling grate.

Types of cement Ambuja Cement produces:



Cement manufacturing: Process Chart



1.MINING & CRUSHING OF LIMESTONE: Limestone is the basic raw material to produce cement. It is mainly obtained from the open cast mining. The limestone is hauled through dumpers up to the 70 to 75 mm size. The crushing of limestone is done through hopper crushed material passed on the conveyor belt in which the addictive material is added to the material.

2. CRUSHING OF GYPSUM & COAL: The second stage of cement manufacturing is to crush the gypsum & coal by griddling machine.

3. MAKE A CINKER: Clinker is a precondition to make cement. So, to make cement of clinker is needed. So, to make a clinker all crushed material like limestone, gypsum & coal water with the help of elevator.

4. STORAGE OF CLINKER: After a making of clinker, its stored in a one place. It's called silo. As per the requirements clinker is sent at required place weighing bin.

5. DRYING OF CLINKER: After making a clinker, it dried in heating machine at 1200–1400-degree Celsius temperature. Minimum 1 hour required for drying the clinker.

6. STORAGE OF DRY CLINKKER: After the drying a clinker it stored in a one place. It's called silo. As per the requirements, clinker is sent at required place through conveyor belt.

7. CRUSHING THE CKINKER & ADDED THE CHEMICAL: Dried clinker is again crushed in the grinding cement mill. And chemical is added as per the grad of cement. After adding the chemicals, this all things are mixing in the raw mill. After this process, all these mixing materials are transferred in to the ruler. Rulers exclude the wastage & clean to the cement.

8. PACKING: Packing is the final step of cement manufacturing process. Clean cement again stored in a silo and last as per the requirement it come in weight box through conveyor belt. After this cement bag which have capacity to include 50 kgs. Cement in it.

All this process is done by these following stages:

(A). MINING STAGE: The limestone is come out from mine by drilling and blast method. And it is reach at plant by huge damper having carrying capacity of 35 tones.

(B). CRUSHER STAGE: Limestone and marl are fed into the crusher plant which crushes the size of 100 mm maximum. This crushed material is taken to the further stage.

(C). STACKER STAGE: The stacker makes stock piles for pre blending in about 350 to 400layers. Sample of limestone are taken out every 5 minutes for analysis in the laboratory to determine their chemical properties, total carbonate. This analysis is done to determine the composition of the stock pile correction where require are done at this stage.

(D). RAW MILL STAGE: Raw mill is a vertical roller mill in which crushes the material into fine powder.

(E). BLENDING SILO STAGE: In this stage silo blends material by clarification. Material gives correct weight of the fed material or not.

(F). PRE-HEATER STAGE: In this stage, passing the material from the top and the hot gases upwards from the kiln so, the materials come down and take heat.

(G). PRE-CALICIFATION: In the pre-calcification the 5% of powdered coal is fired, Because of the ore-heating and kilns are calceficated about 85 to 90 % materials is calcined before the materials enter the coco3 with calcium oxide (quick lime) and carbon dioxide.

(H). CLINKERISATION: This material then enters the kiln, which rotates it with slow speed. The material then enters the sintering zone where. In it the temperature is around 1400 c to 1500 c. Then the clinker is become cooled and it is taken in big for bucket storage.

(I). CEMENT MILL: In this stage the gypsum is added in cement about 4% to 6%. The gypsum is added because this has effect regarding the setting time of cement thereby providing time for work to be performed in planning the concrete. Then it is gone for packing department as a when required.

(J). QUALITY CONTROL: To maintain quality it is required that every stapes of manufacturing process is cheek by proper measurement and in ambuja the whole process right from feeding of raw materials to manufacturing of cement is controlled by Japanese computers. Because of that it is possible to manufacture better than better quality of cement. It use CCU (Close Circuit Unit), in the manufacturing process so, that they have improved their quality of cement and productivity of cement and it is -9000 metric tons per day.

(K). PACKING: The final stage of cement is packing. The capacity of each packer is120mt/hour or 2400 bags per hour the total capacity is 240 tones or 4800 bags per hour. Then they are carried by trucks of wagons for one place to other place.

Production block Diagram



Supply chain management is crucial part of any decisions related to the company's overall growth with a best way of arranging assets and goods.

The main objective in supply chain management, is to use a set of approaches and framework to efficiently integrate **upstream supply chain tiers** (production plant and warehouses, distribution centers, to the **downstream supply chain tires** such as (Ambuja Cement dealers and retail stores in various places.

To accomplish these kinds of approaches first we need to consider the type of market we are targeting for our business and type of costumers who buy our product. To build a competitive advantage in market company have to establish good relationship with dealers and contractors.

To examine the type of Product that Ambuja cement is producing, I focused on two types of Supply Chains given by **Fisher's supply chains** which are following.

- **1.) Physically Efficient Supply Chain (for functional products)-** In this type of supply chains generally product have services have these following qualities
 - a.) Long product life cycle
 - b.) Approximately stable demand
 - c.) Need of large truck loads to distribute the goods
 - d.) Focused on cost minimization
 - e.) Low profit margins on product
 - f.) Less product diversification
 - g.) Less competition in market
 - h.) Less need of product development frequently
 - Examples- food, dairy products, cement and concrete, daily supplies.

2.) Market Responsive Supply Chain (for innovative products)- in this type of supply chains products have these qualities-

- a.) Comparatively less product life cycle (about half year to 2 years)
- b.) Demand always follows the new product launch
- c.) Needs faster delivery and less loading transport facilities
- d.) Focused on quick response to changes of market and customer demands.
- e.) High profit margins on sales
- f.) Frequent product diversification
- g.) Higher competition in market
- h.) Highly needed product development facilities

Examples- all electronics device manufacturers like mobile, TV and computer manufacturers

Hence construction works is continuous production in India and having a stable or growing market demand so the appropriate strategy for supply chain must be a Physically efficient supply chain where the production is focused on cost minimization and easy availability of product. In addition, for Ambuja cements there are following considerations are taken into account while designing the supply chain facilities for Ambuja cement.

- 1.) Inventory Inventory basically is in the form raw material, work in progress and finished product. It is very critical to manage the inventory as per fluctuating customer demand. The task is if the cement production demand is coming for a day which is either 5000 tons or 6100 tons. So, we should always have a stock of inventory to achieve that goal and prevent backlog orders. Inventory plays a leading role to enable the overall production capacity and penetrates the working management to work on time. So every time we will have to make sure that wee have the inventory stock conforming the demand.
- **2.)** Logistics- Logistics design is crucial for moving or settling the finished products and also cost minimization is the foremost criteria for logistic design. Logistics includes distribution centres, transport, transit facility. To determine the best facility all supply chain managers uses all the alternatives available to facilitate the logistic service and then do cost vs benefit analysis and chose the best one among them. Hence ambuja cement is a functional product company so the main focus is to deliver the bulk to the targeted distribution center. Again, cost minimization is taken into account so they calculate per kilometer charge to deliver a Ton of cement and then decides the transport facility. For Rabariyavas plant the logistic facility is of two channels one is Truckloads and second is By Railways.

Truckloads are used for domestic supply and railways is used for interstate supply for better cost minimization.

- **3.) Network Design-** A typical supply chain network design leads a business to maximize its profit margins and reduces the chance to lose market advantage. Its always best to study the market segment and make decision of current production for accomplishment of the goal.
- **4.) Outsourcing or in house production-** ambuja cement uses in house production to accomplish its business in India. Some crucial considerations are low labor costs, availability of raw material, easy transport facility, low cost of instruments rather than outsourcing, competitive advantage and less change to leakage of information to other companies.
- 5.) Risks management-proper risk management is used to conquer this problem.

Utilities

The Utility services are as per the following:

| Power | Overall Plant Requirement: total |
|----------------|------------------------------------|
| | 33.7 MW |
| | 1. Captive power plant I: 15 |
| | MW |
| | 2. Captive power plant II: 18.7 |
| | MW |
| Steam | Overall Plant Requirement is taken |
| | care by two 80 TPH FBC boiler, |
| | Steam at 64 kgs/cm2 and 480°C. |
| Gas Bank (LPG) | Not required in the plant. |
| Water | The source of water is ground |
| | water. The water is stored in a |
| | confined place, which has got a |
| | capacity of 4500 cubic liters |
| | reserves. |
Maintenance

| Туре | Unit Details | Observation |
|------------------------|-------------------------|-------------------------|
| Strength | Strength: 1200 | Proper utilization of |
| | persons. | manpower working in |
| | | three shifts and one |
| | | general shift. |
| Workshop Facility | Routine and minor | The system found to |
| | repairs are carried out | be unsatisfactory as |
| | in house. Major | proper care is being |
| | repairs are being done | taken for the |
| | outside as per | equipments. |
| | company policy. | |
| AMC's/ARC,s | Applicable. | Exists. |
| Spares | Major spares are | Spare equipment |
| | available. | available and regularly |
| | | maintained. |
| Maintenance Schedule | Schedule is followed. | Maintenance is carried |
| | | out by the |
| | | maintenance team for |
| | | all the departments. |
| Critical Equipments | Standby of the critical | Satisfactory and |
| | equipments are | maintained. |
| | available. | |
| Interruption losses in | Not Reported. | No major losses in |
| past (Fire/M.B.) | | past history. |

OVERALL RATING: Good

Security

| Strength | 2 heads round the clock in three shifts. |
|-----------------|---|
| Boundary Wall | High Brick Wall or otherwise. Entry is restricted for |
| | visitors without prior permission. |
| Gates | One gate for movement of material and one gate for |
| | entry of persons. |
| Fire Fighting | Dedicated officer appointed; fire station located at |
| | distance of 40 kms from the plant. |
| Entry and Exit | Monitored by security guards and strictly controlled for |
| | visitors. |
| Emergency Watch | 6 watch towers in background. |
| Tower | |
| Working Hour | 24 hours work is carried out in three 8 hrs shift and one |
| | general shift. |

OVERALL RATING: Good

Risk Exposures

| S | Peril | Exposure | Possibility | Severity | Remarks |
|-----|-------------------|----------|-------------|----------|--------------------------|
| No. | | | | | |
| 1. | Fire/Explosion | High | High | High | Adequate safety measures |
| | | | | | adopted. |
| 2. | Lightning | Low | Low | Moderate | Earthing and lightning |
| | | | | | arrestors are provided. |
| 3. | Aircraft Damage | Low | Low | Low | No past history |
| 4. | Riot, Strike, | Moderate | Low | Low | No past history |
| | Malicious Damage | | | | |
| 5. | Terrorism | Moderate | Low | High | No past history |
| 6. | Bursting/overflow | Moderate | Low | Moderate | No past history |
| | of water pipes/ | | | | |
| | Tanks | | | | |
| 7. | Burglary | Moderate | Low | Low | No past history |

Remarks-Any IR related issues reported and Exposes to Riot, Strike and Malicious Damage are considered low and no history of previous RSMD Loss.

Sustainable development strategies and report

Sustainable development strategy

Ambuja Cement's sustainable development initiatives cover a wide spectrum—from clean technology harnessing to utilisation of industrial wastes in cement production, energy conservation to exploiting renewable energy resources, emissions reduction to creating institutionalised mechanisms to monitor environmental risks and strict adherence to the Company's 'zero non-compliance' regime.

True Value approach- they have adopted True Value accounting method for sustainability, which encompasses the three pillars of sustainability—people, planet, and profit—to emerge as the most competitive and sustainable company in the domestic cement industry. True Value has helped the company to take strategic business decisions through a qualitative measurement of the Company's impact on the environment and society. We have been able to identify a portfolio of cost-effective projects, reduce costs, increase earnings and subsequently increase 'True Value'. company reported incremental growth in 'True Value' over the years, driven by our sustainable, environmental and social interventions and supported by favourable macros at play.



SUSTAINABLE DEVELOPMENT AMBITION 2030

In line with the sustainability strategy of LafargeHolcim, Ambuja Cement's Sustainable Development Ambition 2030 provides critical thrust to our goal of achieving sustainable growth. It provides us with a broad framework for strategic interventions to meet the challenges across four thematic areas—Climate, Circular Economy, Environment, and Community.

| | * | | A Contraction | A A |
|---------------------|---|-------------------------------------|--|---|
| | Climate | Circular Economy | Environment | Community |
| Lead metrics | CO ₂ emissions reduced (kg CO ₂ /t of cement) | Waste reused (Million tonnes) | Water saved (Freshwater withdrawal: L/t of cement) | Value shared (Million new beneficiaries) |
| Performance 2020 | 531 | 8.2 | 77 | 0.3 |
| Target 2030 | 463 | 13.5 | <75 | 0.8 |
| SDGs impacted | 13 denne Action | 12 REPROSENT | 6 CLEANMITTH AND LANK THE IN | |

*Other than the above identified Sustainable Development Goals (SDGs), our activities under the four pillars also address various sub-targets of other SDGs.

Observations

- 1.Cement production is 6000 T per day.
- 2. Area of the plant is 1600 hectare including the mines.
- 3. The type of supply chain used is Physically Efficient Supply Chain with almost stable or growing demand in market.

4. The daily dispatch capacity of the plant is average 500 trailers per day with 13 container filling stations.

5. They have their emergency response team (ERT) and emergency phone numbers available for 24 hours and Fire Brigade facility was available for 24 hours in case of any emergency.

6.Quality is maintained as per ISI` standards.

7.Health, safety, environment and quality policy was taken.

8.Main motto of the company is zero harm by following rules and regulations given by state, by continuous awareness among employees and by sharing knowledge with other company.

9. 68 hydrant points are installed.

10. Approximately 400 fire extinguishers are installed.

11.Pressurized equipments are tested in 6 months.

12. There are 2 boilers having capacity of 80 TPH.

13.Hydraulic testing is done in 3 yrs in the presence of any competent person.

14.Electrical equipments are ISI marked.

15.Work permit is required for working 3m and above.

16.Lockout and isolation procedure is followed for the equipment.

17.No major losses in the past.

18. The plant is continuous process plant working in 3 shifts and one general shift.

19. They have their own workshop where the repairing of the equipments is carried out and in case of major breakdown; machinery is repaired from outside workshop.

20.All equipments are working properly.

21.Building regulations was compiled and proper distance is maintained between the equipments.

22. They have their own mines at distance of 3kms approx within the premises.

23.Annual maintenance plan is carried out annually.

24.Spare parts of equipments are available.

25.Lightening arrestors are installed in Silos.

26.Proper earthing is provided to all electrical drives.

27.Log records are maintained for the machines on MAC system regularly.

28. Every equipment has its own HAC (Holcim Asset Code) number.

29. There are two main gates. One for the entry of employees or visitors and other for the entry of materials.

30.Capacity of gearbox is 1000 KW.

31.Cement quality is checked every hour.

32.Heat lost in the kiln is used in the burning of coal.

33.The plant is operated from CCR.

34. There are three Silos for the storage of cement each of which is 9000 MT in capacity.

35.32tons of coal is burnt per hour to maintain the temperature in the kiln.

36.There are 18 fans in cooler.

37. The critical equipments observed are raw mill, Kiln, Cement Mill.

38. The capacity of clinker Silo is 2300 MT.

39. The capacity of kiln 6000 TPD.

40. There are four packing machines. Capacity of each packing machines is 120 TPH.

41. There are three crushers having capacity of 700 TPH, 900 TPH and 1200 TPH.

42.Awards received:

a) Greentech Safety Bronze award in cement sector.

b) National award for second best improvement in electrical energy performance by Nation Council for Cement and Building Materials.

c) Certificate of Merit' by 'Rajasthan State Productivity Council'.

d) Nominated for accident-free year 2010.

43.Further expansion of plant can be done within the premises.

44.Upcoming projects:

a) new power plant having capacity of 6.4 MW based on waste heat recovery system from kiln gases.

b) New kiln having capacity of 2800 TPD of clinker production.



Learning Outcomes from this internship:

- Learnt about large scale manufacturing structures and organizations, and how they work to accomplish their goal.
- I was exposed to different production process and value of time in their completion.
- Studied about organization structure of such a large-scale company and coordination between higher management decisions to employee work and productivity.
- Learnt about how to manage inventory as per demand of per day goal and inventory allowances to reduce unexpected quality issues.
- Learnt about logistics and distribution levels and management of supply chain.
- Learnt how to design and choose a typical supply chain and how it is important for an organisations.
- Learnt about how the company's balance sheets reflects its overall growth.
- Learnt about sustainable development need in any industry to understand the nature, and make equilibrium between business and mother earth.
- Learnt about risks and accidents happen and their intensity in 24 hour working industries.
- Analyzed the data of dispatch vs incoming order and how it is compensated on daily basis.
- Experienced industrial environment and need of accuracy to profit overall production.

The overall internship experience was too informative and helpful to learn about a typical large-scale industry and its working at different levels and responsibilities. The instructor was knowledgeable and experienced, and gave exposure to the latest techniques of supply chain management and inventory control. Here are some suggestions which should be improved in the factory-

- Employee and manager relationships should be better.
- Safety measures must be modified.
- The transportation service and filling stations can be optimized on basis of time and minimize the time of filling the trucks.
- There is a lot of heat required to maintain the temperature of clinker kiln so some alternatives should be deployed so the consumption of coal can be reduced.

Project Study

Report On

"Summer online Training" undertaken at

<u>"Borana Industries"</u>

Submitted In Partial Fulfillment for the Award of Degree of

Bachelor of Engineering



2020-2021

Department of Production and Industrial Engineering M.B.M. Engineering College, Faculty of Engineering and Architecture, Jai Narain Vyas University, Jodhpur

Submitted By: MOHD. NAVEED 19UPIE1310 B.E. 3rd Year

Submitted To: Dr. Milind Kumar Sharma Professor and Head Dept. of P&I Engineering

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INTERNSHIP REPORT ON BORANA INDUSTRIES

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INTRODUCTION

In Plant Training (IPT)

In Plant Training will provide an industrial exposure to the students as well as to develop their career in the high tech industrial requirements. Reputed companies are providing in plant training to Students. Here students are initially get counseled in order to emerge out their interest in various streams and what are all the basic concepts they know on that domain.

After the successful completion of studies students has to face this competitive world with this knowledge to face many problems and to find the right solutions which is to be solved in the minimum duration of time. The inplant training is get totally different from the class environments.

OBJECTIVES

- This training enables us to acquire more practical knowledge.
- ✤ The In-plant training totally different from the class environments.
- ✤ To learn real life application of Management.
- \clubsuit To relate theoretical concepts and organizational functioning
- Training will provide an industrial exposure.
- ✤ To study the production level and various stages of production.
- ✤ To learn the company and industrial polices.
- ✤ To study various functions of departments.

BORANA INDUSTRIES

BORANA PVC PIPE INDUSTRY is an Indian PVC pipe manufacturing company based in JODHPUR, RAJASTHAN, INDIA. Founded in 1984.

Around 75-80 members are working in this company and they manufacture PVC pipes under customers demand. They manufacture pipes ranging from 1/2 inch to 7 inches which include ISI certified water pipes and also strong electrical wire fencing plastic tubes from the old, waste plastic PVC materials.

They recycle 90% of used and waste PVC materials to manufacture a completely dependable pipe material. They import mixtures from Malaysia and collect the used PVC materials from various parts of Karnataka, Kerala Tamil Nadu & Rajasthan.

In 1984 BORANA PIPES INDUSTRY had only 5 employees and now they have got more than 75 employees and most of their manufacturing machines are semi-automatic machines. Their machines are manufactured in such a way that they do not pollute the environment. Water used inside the coolant chambers are properly recycled for later use and no wastes are dumped in the farm or barren lands instead they are properly recycled.

Raw materials used are ordered in MALAYSIAN regions and that include pure form of Calcium Carbonate, CPW oil, Oil wax, button wax and Timonium.

ADDRESS OF BORANA PVC PIPE INDUSTRY;

SE-39, MIA BASNI, 2nd PHASE BASNI, JODHPUR, RAJASTHAN, PIN CODE (342000)

POLYVINYL CHLORIDE

Polyvinyl chloride, more correctly but unusually poly(vinyl chloride), commonly abbreviated **PVC**, is the third-most widely produced synthetic <u>plastic</u> <u>polymer</u>, after <u>polyethylene</u> and <u>polypropylene</u>.

PVC comes in two basic forms: rigid (sometimes abbreviated as RPVC) and flexible. The rigid form of PVC is used in <u>construction</u> for pipe and in profile applications such as doors and windows. It is also used for bottles, other non-food packaging, and cards (such as bank or membership cards). It can be made softer and more flexible by the addition of <u>plasticizers</u>, the most widely used being <u>phthalates</u>. In this form, it is also used in plumbing, electrical cable insulation, imitation leather, signage, inflatable products, and many applications where it replaces rubber.

Pure poly (vinyl chloride) is a white, brittle solid. It is insoluble in alcohol but slightly soluble in <u>tetrahydrofuran</u>.

Discovery

PVC was accidentally synthesized in 1872 by German chemist Eugen Baumann. The polymer appeared as a white solid inside a flask of vinyl chloride that had been left exposed to sunlight. In the early 20th century the Russian chemist Ivan Ostromislensky and Fritz Klatte of the German chemical company Griesheim-Elektron both attempted to use PVC in commercial products, but difficulties in processing the rigid, sometimes brittle polymer thwarted their efforts. Waldo Semon and the B.F. Goodrich Company developed a method in 1926 to plasticize PVC by blending it with various additives. The result was a more flexible and more easily processed material that soon achieved widespread commercial use.

Production

Polyvinyl chloride is produced by polymerization of the vinyl chloride monomer (VCM), as shown.



About 80% of production involves suspension polymerization. Emulsion polymerization accounts for about 12% and bulk polymerization accounts for 8%. Suspension polymerizations affords particles with average diameters of 100–180 μ m, whereas emulsion polymerization gives much smaller particles of average size around 0.2 μ m. VCM and water are introduced into the reactor and a polymerization initiator, along with other additives. The reaction vessel is pressure tight to contain the VCM. The contents of the reaction vessel are continually mixed to maintain the suspension and ensure a uniform particle size of the PVC resin. The reaction is exothermic, and thus requires cooling. As the volume is reduced during the reaction (PVC is denser than VCM), water is continually added to the mixture to maintain the suspension.

The polymerization of VCM is started by compounds called initiators that are mixed into the droplets. These compounds break down to start the radical chain reaction. Typical initiators include dioctanoyl peroxide and dicetyl peroxydicarbonate, both of which have fragile O-O bonds. Some initiators start the reaction rapidly but decay quickly and other initiators have the opposite effect. A combination of two different

Initiators is often used to give a uniform rate of polymerization. After the polymer has grown by about 10x, the short polymer precipitates inside the droplet of VCM, and polymerization continues with the precipitated, solvent-swollen particles. The weight average molecular weights of commercial

polymers range from 100,000 to 200,000 and the number average molecular weights range from 45,000 to 64,000.

Once the reaction has run its course, the resulting PVC slurry is degassed and stripped to remove excess VCM, which is recycled. The polymer is then passed through a centrifuge to remove water. The slurry is further dried in a hot air bed, and the resulting powder sieved before storage or pillarization. Normally, the resulting PVC has a VCM content of less than 1 part per million. Other production processes, such as micro-suspension polymerization and emulsion polymer.

PIPES:

Roughly half of the world's polyvinyl chloride resin manufactured annually is used for producing pipes for municipal and industrial applications. In the water distribution market it accounts for 66% of the market in the US, and in sanitary sewer pipe applications, it accounts for 75%. Its light weight, low cost, and low maintenance make it attractive. However, it must be carefully installed and bedded to ensure longitudinal cracking and overbelling does not occur. Additionally, PVC pipes can be fused together using various solvent cements, or heat-fused (butt-fusion process, similar to joining <u>HDPE</u> pipe), creating permanent joints that are virtually impervious to leakage. In February, 2007 the California Building Standards Code was updated to approve the use of <u>chlorinated polyvinyl chloride</u> (CPVC) pipe for use in residential <u>water supply</u> piping systems. CPVC has been a nationally accepted material in the US since 1982; <u>California</u>, however, has permitted only limited use since 2001. The Department of Housing and Community Development prepared and certified an <u>environmental impact statement</u> resulting in a recommendation that the Commission adopt and approve the use of CPVC. The Commission's vote was unanimous and CPVC has been placed in the 2007 California Plumbing Code.

In the United States and <u>Canada</u>, PVC pipes account for the largest majority of pipe materials used in buried municipal applications for <u>drinking</u> <u>water</u> distribution and <u>wastewater</u> mains. Buried PVC pipes in both water and sanitary sewer applications that are 4 inches (100 mm) in diameter and larger are typically joined by means of a gasket-sealed joint. The most common type of gasket utilized in North America is a metal reinforced elastomer, commonly referred to as a Rieber sealing system.

PRODUCT PROFILE



QUALITY ASSURANCE



We firmly believed that quality helps in forming the backbone of any organization. our endeavours are directly towards manufacturing optimal quality corrugated packaging boxes we halved employed well versed quality auditors who strictly monitors, the enter proceeding of our manufacturing unit

RESEARCH & DEVELOPMENT

To keep a pace with the emerging market trends, we have employed a diligent team of R&D personnel, which conducts rigors and exhaustive research of the market.

Our professionals read each and every facet of the market, which helps us in developing our research activities are cantered on following parameters:

- * Design
- * Raw material
- * Manufacturing process

After conducting a thorough research, our team offers various implications that might proof

Beneficial for organization .after much planning and scheming viable suggestions of our researchers are implemented in different units, to kea large client base across ep abreast with market trends, we constantly develop different units of our organization

Our team

Our competitive team is the leading force which has driven our organization on the path of success. We have with us a hardworking and sincere team of professionals, who helps us in serving our clients with world class products

- * Engineer
- Technicians
- * R&D executives
- Marketing executives

Due to our professional's innovative approaches. We have managed to make a strong mark in the industry .further, we also provide them skills development training on regular intervals, so that they can manufacture a range that exceeds that expectations of our reputed clients

Clientele:

Being a client centric organisation ,we make sure to offer our client customized solutions so as to garner complete customer satisfaction at client as well as our end.in order to manufacture an optimum range of products ,we make use of the high quality raw materials and offer our products at market leading prices due to these reasons ,we have been able to form a large client base across the global the department of housing and community development prepared and certified an environmental impact statement resulting in a recommendation that the commission adopt and approve the use of cpvc. The commission's vote was unanimous and cpvc has been pieced in the 2007california plumbing code

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MANUFACTURING INDUSTRY

MANUFACTURING DEFINITION

The process of converting raw materials, components, or parts into finished goods that meet a customer's expectations or specifications. Manufacturing commonly employs a man-machine setup with division of labor in a large scale production.

Manufacturing industry refers to any business that transforms raw materials into finished or semi-finished goods using machines, tools and labor. Manufacturing sectors include production of food, chemicals, textiles, machines and equipment.

MEANING

Manufacturing is the production of <u>merchandise</u> for use or sale using labor and <u>machines</u>, tools, chemical and biological processing, or formulation. The term may refer to a range of human activity, from <u>handicraft</u> to <u>high tech</u>, but is most commonly applied to <u>industrial</u> production, in which <u>raw materials</u> are transformed into <u>finished goods</u> on a large scale. Such finished goods may be used for manufacturing other, more complex products, such as <u>aircraft</u>, household appliances or automobiles, or sold to <u>wholesalers</u>, who in turn sell them to <u>retailers</u>, who then sell them to end users – the "<u>consumers</u>".

Manufacturing takes turns under all types of <u>economic systems</u>. In a free market economy, manufacturing is usually directed toward the <u>mass</u> <u>production</u> of <u>products</u> for sale to <u>consumers</u> at a profit. In a <u>collectivist</u> <u>economy</u>, manufacturing is more frequently directed by the state to supply a centrally <u>planned economy</u>. In mixed market economies, manufacturing occurs under some degree of government <u>regulation</u>.

Modern manufacturing includes all intermediate processes required for the production and integration of a product's components. Some industries, such as <u>semiconductor</u> and <u>steel</u> manufacturers use the term fabrication instead.

The manufacturing sector is closely connected with <u>engineering</u> and <u>industrial design</u>. Examples of major manufacturers in <u>North America</u> include <u>General Motors Corporation</u>, <u>General Electric</u>, <u>Procter & Gamble</u>, <u>General Dynamics</u>, <u>Boeing</u>, <u>Pfizer</u>, and <u>Precision Cast parts</u>.

Industry is the production of a good or service within an economy. Manufacturing industry became a key sector of production and labor in <u>European</u> and <u>North American</u> countries during the <u>Industrial Revolution</u>, upsetting previous <u>mercantile</u> and <u>feudal</u> economies. This occurred through many successive rapid advances in technology, such as the production of <u>steel</u> and <u>coal</u>.

Following the Industrial Revolution, perhaps a third of the world's economic output is derived from manufacturing industries. Many <u>developed</u> <u>countries</u> and many developing/semi-developed countries (People's Republic of China, India etc.) depend significantly on manufacturing industry. Industries, the countries they reside in, and the economies of those countries are interlinked in a complex web of interdependence.

FUNCTIONS OF DEPARTMENTS

The Major Departments are

- 1. Finance Department
- 2. Human Resources Department
- 3. Production Department
- 4. Marketing Department



FINANCE DEPARTMENT

Finance

Finance Department is the activity of managing the money to run out the business in a proper manner.

Finance Functions

- The financial section of the organisation will keep manual/electronic records of money received and paid out by the organisation.
- This information will then be used to produce various financial statements for tax purposes and to comply with legal requirements.
- The information will also be used to produce management accounts to enable senior managers to plan and review business strategy.
- The finance department or unit may also be responsible for administering employee expenses and salaries.
- For payment of wages the finance department will need to take into account statutory deductions such as tax, and employee contributions such as pension or loan repayments.

Finance and Accounting Department Duties

- * Preparation of budget,
- * Appropriation of accounts
- * Re-appropriations,
- * Surrender and Savings.
- * Control of Expenditure
- * Ways & Means position.
- * Sales Tax,
- * Entertainment Tax,
- * Luxury Tax
- * Entry Tax
- * Service Conditions
- * Resource mobilization through loans,
- * Institutional Finance,
- * Small Savings,
- * Credit and Investment

Finance Department in Organization

- The Finance Department is an organization dedicated to providing quality financial, and judicial services to other City Departments, the City Council, and the citizens of Abilene.
- These services are intended to be provided in a timely, accurate, and cost efficient manner by utilizing quality employees, technological advances, and generally accepted principles while fulfilling legal responsibilities.

The Finance Department continues to respond to organizational and community needs through development of new programs and modification of existing programs. Issues that continue to face the organization are heavy reliance on sales tax, lack of significant revenue growth, and increased expenditure needs to maintain service levels.



HUMAN RESOURCES DEPARTMENT

Involvement of Human Resource Management

- Human Resource Management involves the development of a perfect blend between traditional administrative functions and the well-being of all employees within an organization.
- Employee retention ratio is directly proportionate to the manner in which the employees are treated, in return for their imparted skills and experience.
- A Human Resource Manager ideally empowers inter-departmental employee relationships and nurtures scope for down-the-rung employee communication at various levels.
- Every organization now has an exclusive Human Resource Management Department to interact with representatives of all factors of production.
- The department is responsible for the development and application of ongoing research on strategic advances while hiring, terminating and training staff.
- The Human Resource management is responsible for Understanding and relating to employees as individuals, thus identifying individual needs and career goals.
- Developing positive interactions between workers, to ensure collated and constructive enterprise productivity and development of a uniform organizational culture.
- Identify areas that suffer lack of knowledge and insufficient training, and accordingly provide remedial measures in the form of workshops and seminars.

Human Resources Planning

- 1. Forecasting
- 2. Maintaining personnel inventories
- 3. Succession planning
- 4. Modeling career paths

Training & Development

- 1. Devising programs
- 2. Hourly Workers
- 3. Managerial Staff

Employment

- 1. Recruitment
- 2. Selection
- 3. Testing
- 4. Orientation

Compensation

- 1. Incentive pay plans
- 2. Job analysis
- 3. Job evaluations
- 4. Wage surveys
- 5. Performance reviews

Personnel Research

- 1. Administering opinion surveys
- 2. Conducting HR audits
- 3. Publishing statistical analysis

Functions of Human Resource Department

- Getting Paying Employees
- Paying employees (and Providing Benefits)
- <u>Training Employees</u>



Role of Production Department

- The main role of production is to turn inputs (raw materials) into outputs (finished goods).
- Outputs refer to a finished product or service and inputs are the materials that are needed to manufacture certain goods.
- ✓ When a business completes this process they are able to achieve customer satisfaction by producing products that are ready to be used and fit for purpose.

The function of the production department is to produce our products on time, to the required quality levels, at the defined product cost.

Component and materials procurement is another factor that strongly influences production, production targets and delivery. If components cannot be purchased at the target price, profits are down. If components arrive late at our factory production targets may not be met and customers may experience late delivery. Purchasing of components and materials is carried out by the Purchasing section of Production.

Features of Production Department

Creation

- The foundation of every production and operations department is the creation of goods or services.
- Traditionally, production included the physical assembly of goods, but production can also include data-based goods such as websites, analysis services and order processing services.

Customer Service

- The production and operations department contains the customer-facing customer service department that addresses the needs of the customer after the purchase of goods or services.
- The support function usually is served through phone, online or mail based support.

Profit

- The main function of the production and operations department is to produce a product or service that creates profit and revenue for the company.
- Actualization of profit requires close monitoring of expenses, production methodology and cost of inputs.

Evaluation

- Every production and operations department must function as self-evaluating entity that monitors the quality, quantity, and cost of goods produced.
- Analysis usually takes the form of statistical metrics, production evaluation and routine reporting.

FUNCTIONS OF PRODUCTION DEPARTMENT

Materials:

- ✓ The selection of materials for the product. Production manager must have sound Knowledge of materials and their properties, so that he can select appropriate materials for his product.
- ✓ Research on materials is necessary to find alternatives to satisfy the changing needs of the design in the product and availability of material resumes.

Methods:

✓ Finding the best method for the process, to search for the methods to suit the available resources, identifying the sequence of process are some of the activities of Production Management.

Machines and Equipment:

 ✓ Selection of suitable machinery for the process desired, designing the maintenance policy and design of layout of machines are taken care of by the Production Management department.

Estimating:

- ✓ To fix up the Production targets and delivery dates and to keep the production costs at minimum, production management department does a thorough estimation of Production times and production costs.
- ✓ In competitive situation this will help the management to decide what should be done in arresting the costs at desired level.

Loading and Scheduling:

- ✓ The Production Management department has to draw the time table for various production activities, specifying when to start and when to finish the process required.
- ✓ It also has to draw the timings of materials movement and plan the activities of man power.
- ✓ The scheduling is to be done keeping in mind the loads on hand and capacities of facilities available.

Routing:

- ✓ This is the most important function of Production Management department.
- ✓ The Routing consists of fixing the flow lines for various raw materials, components etc.,
- ✓ From the stores to the packing of finished product, so that all concerned knows what exactly is happening on the shop floor

Dispatching:

- ✓ The Production Management department has to prepare various documents such as Job Cards, Route sheets, Move Cards, Inspection Cards for each and every component of the product.
- ✓ These are prepared in a set of five copies.
- ✓ These documents are to be released from Production Management department to give green signal for starting the production.
- ✓ The activities of the shop floor will follow the instructions given in these documents. Activity of releasing the document is known as dispatching.

Inspection:

✓ Here inspection is generally concerned with the inspection activities during production, but a separate quality control department does the quality inspection, which is not under the control of Production Management.

✓ This is true because, if the quality inspection is given to production Management, then there is a chance of qualifying the defective products also.

Working Process in Production Department



MARKETING DEPARTMENT

- Ascent circuits Company growing in the market size and in its product exports in both the national level and international level.
- The company having many competitors in the inner and outer of the nation.
- The market position of the Ascent Company growing day to day in a systematic order.
- Some of the companies that are in the competition view towards Ascent Company are stated below.

Role of Marketing Department

- The marketing department will research customer needs to develop strategy and product to satisfy that customer need.
- In its research, the marketing department will investigate the market they are aiming at; the type of consumer making up the market (age, background sex etc.) and the preferences of the consumer within that market.
- The marketing department will then need to marry consumer preferences with producing a product that is profitable.

- Once the product has been designed by the production department marketing will then need to package, advertise, and promote the product.
- Sales are responsible for persuading the consumer to purchase the end product, manufactured through marketing's research.
- The Sales Department's selling strategy could involve mail shots, travelling sales representatives, telephone sales and devising the sales interview.

Overview

- Small companies may consist of one or two marketing employees, and larger organizations may have dozens of marketing employees.
- The organizational structure of the marketing department of a company can vary according to the individual company

Marketing Manager

- Marketing manager and marketing director are often interchangeable in the world of marketing.
- ✤ A marketing manager typically has the responsibility of carrying out the marketing strategy for the company.
- This includes creating marketing messages, choosing mediums such as website advertising and print advertising, and carrying out other

marketing campaigns and programs to reach the target audience of the company.

- The marketing manager reports to the vice president and generally manages the rest of the marketing employees.
- In product-based companies that have different product lines, a marketing manager may exist for each product line.

Market Researchers

- Market researchers can employ tools, such as surveys and focus groups to help them uncover information and statistic or use publications, such as the U.S. Census to obtain information.
- The research, information and statistics found by the market researchers are used by the marketing manager to create the programs and messaging.
- Small- to medium-size companies tend to hire a third-party source for market research rather than have a full-time market research staff. Large organizations employ its own market researchers.

PURCHASE DEPARTMENT

Role of Purchase Department

- It is policy to maintain a reputation for fairness and integrity in its dealings with legitimate and reliable firms and to promote sound relationships with such firms.
- Sy maximizing competition among reputable firms, an impartial selection of qualified sources for materials, equipment, supplies and services can be attained and still merit the continuing confidence of suppliers, customers and the public while maintaining high ethical standards.

The expenditures for materials, equipment, goods and services

Each Strategic Business Unit and facility shall establish a written purchasing policy and procedure to insure that adequate controls are in effect to assure that purchases are properly authorized before orders are placed with vendors.

Also, such policy must insure that adequate documentation is requested from vendors to describe goods and/or services rendered. Purchasing, in the broadest sense, involves every organizational unit which participates in the planning, design or use of materials, equipment, supplies and services required in ERL operations.

Activities of Purchase Department

- Through coordination of purchasing activities in all of these organizational units, and cooperation between such units, the Company will receive the desired value of needed materials, equipment, supplies and services at the lowest possible cost.
- Supply Chain Management personnel of each major operating business unit have the primary responsibility for
- Purchasing all materials, equipment, supplies and services at the best possible prices,
- Maintaining confidence of suppliers and the public.

Functions of Purchase Department

- Procurement of stores through indigenous and foreign sources as required in accordance with the rules in force.
- Checking of requisitions/purchase indents.
- Selection of suppliers for issue of enquiries.
- Issuing enquiries/tenders and obtaining quotations.
- ✤ Negotiating contracts.
- Checking legal conditions of contracts.
- ✤ Issue of Purchase Orders.
- Follow-up of purchase orders for delivery in due time
- ✤ Maintenance of purchase records.

- ✤ Maintenance of progressive expenditure statement, sub-head wise.
- ✤ Maintenance of vendor performance records/data.
- Arrangement for Insurance Surveys, as and when necessary.
- Clearance of foreign consignments.

MANUFACTURING PROCESS

For more than 50 years, PVC has been very successful throughout the world. Today, this versatile material is one of the most important plastic materials recognised internationally and proven on the market.

PLASTIC PIPES

Plastic pipes are produced by extrusion process followed by calibration to ensure maintenance of accurate internal die with smooth internal boxes. These pipes generally come in lengths of 6 meters. A wide range of injection moulded fittings, including tees, elbows, reducers, caps, pipes saddles, inserts and threaded adaptors for pipe sizes 15-150mm are available.

PVC Pipes The chief advantage of PVC are:

Resistance to corrosion Light weight Toughness Rigidity Economical in laying, jointing and maintenance Ease of fabrication

The PVC pipes are much lighter than cast iron or A.C pipes. Because of their light weight

PVC pipes are easy to handle, transport, and install. Solvent cementing techniques for jointing

PVC pipe lengths are cheaper, more efficient and far simpler. PVC pipes do not become pitted or tuberculate and are unaffected by fungi and bacteria and are resistant to a wide range of chemicals. They are immune to galvanic and electrolytic attack, a problem frequently encountered in metal pipes especially when buried in corrosive soils or near brackish waters.

PVC pipes have elastic properties and their resistance to deformation resulting from earth movements is superior compared to conventional pipe materials especially asbestos. Thermal conductivity of PVC is very low compared to metals. Consequently water transported in these pipes remain at a more uniform.

Rigid PVC pipes weighs only 1/5 of conventional steel pipes of comparable sizes. PVC pipes are available in sizes of outer dia20,25,32,50,63,75,90,110,140,160,250,290,315mm at working pressure of2,5,4,6,10Kg/cm2. Since deterioration and decomposition of plastics are accelerated by ultraviolet light and frequent changes in temperature which are particularly severe in our country if is not advisable to use PVC pipes above ground.

The deterioration starts with Discolouration, surface cracking and ultimately ends with brittleness and the life of the pipe may be reduced to 15-20 years.

Precautions in Handling and storage

Because of their light weight, there may be a tendency for a PVC pipes to be thrown much more than their metal counterparts. This should be discoursed and reasonable care should be taken in handling and storage to prevent damage to the pipes. On no account should pipes be dragged along the ground pipes should be given adequate support at all times. These pipes should not be stacked in large piles, especially under warm temperature conditions, as the bottom pipes may be distorted thus giving rise to difficulty in pipe alignment and jointing.

For temporary storage in the field, where racks are not provided, care should be taken that ground is level, free from loose stones. Pipes stored thus should not exceed three layers and should be stacked as to prevent movement. It is also recommended not to store one pipe inside another.

Laying and Jointing Procedures

Trench Preparation:

The trench bed must be free from any rock projections. The trench bottom where it is rocky and uneven a layer of sand or alluvial earth equal to 1/3 die of pipe or 100mm whichever is less should be provided under the pipes. The trench bottom should be carefully examined for the presence of hard objects such as flints, rock, projections or tree roots. In uniform, relatively soft fine grained soils found to be free of such objects and where the trench bottom can readily be brought to an even finish providing a uniform support for the pipes over their lengths, the pipes may normally directly on the trench bottom. In other cases the trench should be cut correspondingly deeper and the pipes laid on a prepared under biding, which may be drawn from the excavated material if suitable.

Laying and Jointing:

As a rule trenching should not be carried out too far ahead of pipe laying. The trench should be as narrow as practicable. This may be kept from 0.30m over the outside diameter of pipe and depth may be kept at 0.60 - 1.0m depending upon traffic conditions. Pipe lengths are placed end to end along the trench. The glued spigot and socket jointing technique as mentioned later is adopted. The jointed lengths are then lowered in the trench and when sufficient length has been laid the trench is filled.

If trucks, Lorries, or other heavy traffic will pass across the pipe line, concrete tiles 600 x 600mm of suitable thickness and reinforcement should be laid about 2m above the pipe to distribute the load. If the pipe line crosses a river the pipe should be buried at least 2m below bed level to protect the pipe.

For bending, the cleaned pipe is filled with sand and compacted by tapping with wooden stick and pipe ends plugged. The pipe section is heated with flame and the portion bent as required. The bend is then cooled with water, the plug removed, the sand poured out and the pipe (bend) cooled again. Heating in hot air over hot oil bath, hot gas or other heating devices are also practiced. Joints may be jet welded, or flamed or with rubber gaskets or made with solvent cement. Threaded joints are also feasible but are not recommended. Socket and spigot joint is usually is preferred for all PVC pipes up to 150mm in dia. The socket length should at least be one and half times the outer die for sizes up to 100mm dia and equal to the outer dia for larger sizes.

For pipe installation, solvent gluing is preferable to welding. The glued spigot socket connection has greater strength than can ever be achieved by welding. The surfaces to be glued are thoroughly scoured with dry cloth and preferably chamfered to 30. If the pipes have become heavily contaminated by grease or oil, methylene cement is applied with a brush evenly to the outside of the socket on the other. The spigot is then inserted immediately in the socket up to the shoulder and thereafter a quarter (90) turn is given to evenly distribute the cement over the treated surface. The excess cement which is pushed out of the socket must be removed at once with a clean cloth. Jointing must be carried out in minimum possible time, time of making complete joint not being more than one minute. Joints should not be disturbed for at least 5 minutes. Half strength is attained in 30 minutes and full in 24 hours.

Pre-fabricated connections

In laying, long lengths of pipe, prefabricated double socketed connections are frequently used to join successive pipe lengths of either the same or one size different. The socket in this case must be formed over a steel mandrel. A short length of pipe is flared at both ends and used as a socket connection. The mandrel used in sized such that the internal dia of the flared socket matches the outer dia of the spigot to be connected. By proper sizing of the two ends of a connector, it is possible to achieve reduction (or expansion) of pipe size across the connector.

Standard threaded connections

Normally PVC pipes should not be threaded for the connections of PVC pipes to metal pipes, a piece of a special thick wall PVC connecting tube threaded at one end is used. The other end is connected to the normal PVC pipe by means of a glued spigot and socket joint. Before installation the condition of the threads should be carefully examined for cracks and impurities. Glue can be used for making joints leak proof. Yarn and other materials generally used with metal pipe and fittings should not be used. Generally, it is advisable to use PVC as the spigot portion of the joint.

Pressure Testing

The method which is commonly in use is filling the pipe with water, taking care to evacuate any entrapped air and slowly raising the system to appropriate test pressure. The pressure testing may be followed as in 6.4.4.2.

After the specified test time has elapsed, usually one hour, measured quantity of water is pumped into the line to bring it to the original test pressure, if there has been loss of pressure during the test. The pipe shall be judged to have passed the test satisfactorily if the quantity of water required to restore the test pressure of 30 m for 24 hours does not exceed 1.5 litres per 10 mm of nominal bore for a length of 1 Km.

FINDINGS

- Workers have been provided with aprons, gloves, shoes, head covers and ID cards.
- 2. 75% of work is done manually and 25% of work is done through automated machines.
- 3. Hygienic lunches for the employees are provided.
- 4. Refreshments like tea, coffee, biscuits are also provided.
- 5. Production processes are highly ECO-FRIENDLY.

- 6. They recycle 95% of their waste materials.
- 7. Solar powered generators are being effectively used.

CONCLUSION

The In-Plant Training was in fact an eye opening movement for the Trainee. It helped the Trainee to co-relate the theory into practical aspects. At certain situation Trainee found a wide gap between Theory & Practical knowledge. This becomes a great challenge for the trainee to understand deeply. But as a whole, In-Plant Training immensely helped the Trainee to know the history, working structure, production process, its products, sales and total management of that particular company.

AutoCAD

Report Submitted in Partial Fulfilment of the Requirements for the Degree of

Bachelor of Engineering *in* Production and Industrial Engineering

Submitted by DHEERAJ SOLANKI: (Roll No. 18UPIE1304)



Department of Production and Industrial Engineering M.B.M. Engineering College Faculty of Engineering & Architecture Jai Narain Vyas University, Jodhpur

2020-2021

Department of Production and Industrial Engineering

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CERTIFICATE

This is to certify that the work contained in this report entitled "AutoCAD" is submitted by Mr. **Dheeraj Solanki**, (Roll. No: 18UPIE1304) to the Department of production and Industrial Engineering, M.B.M. Engineering College, Jodhpur, for the partial fulfilment of the requirements for the degree of **Bachelor of Engineering** in **Production and Industrial Engineering**.

He has carried out his work under my supervision. This work has not been submitted else-where for the award of any other degree or diploma.

The project work in my opinion, has reached the standard fulfilling of the requirements for the degree of Bachelor of Engineering in Production and Industrial Engineering in accordance with the regulations of the Institute.

Dr.Milind Kumar Sharma (Head Of Department) Production and Industrial Engg. M.B.M. Engineering College, Jodhpur

DECLARATION

I,Dheeraj Solanki by declare that this seminar/project titled "AutoCAD" is a record of original work done.

certify work not formed the basis for the further that this has award the I, of Degree/Diploma/Associateship/Fellowship or similar recognition to any candidate of any university and no part of this report is reproduced as it is from any other source without appropriate reference and permission.

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1.Introduction

Internshala is an internship platform, based out of Gurgaon, India.

Founded by Servesh Agarwal, an IIT Madras aluminus, in 2010.

The website helps students find internships with organisation in India.

2. Vision

Internshala is a dot com business with the heat of dot org.

At the core of the idea is the belief that internship, if managed well, can make a positive difference to the student to the employer, and to the society at large.

ad-hoc culture surounding internships in India should and would change, Internshala aims to be the driver of this change.

3. HISTORY

The platform started as a WordPress blog which aggregated internships across India and articles on education, technology and skill gap in 2010. The website was launched in 2013. Internshala launched its online trainings in 2014. The platform is used by 2.0 Mn + students and 70000+ companies.

4. PARTNERSHIPS

In August 2016, Telangana's not-for-profit organisation, Telangana Academy for Skill and Knowledge (TASK) partnered with Intemshala to help students with internship resources and career services. > In September 2016, Team Indus, Google XPRIZE shortlisted entity has partnered with Internshala for college outreach for its initiative, Lab2Moon.

5. AWARDS AND RECOGNITION

In 2011, the website became a part of NASSCOM 10K Startups. In 2015, Intemshala was a finalist in People Matters TechHR 2015 Spotlight Awards under Futurism in Recruitment' category.

6. PRODUCTS & SERVICES

Internshala of fers following products & services to its users:

1. Internship posting: Organization & individuals looking to hire intems can post their internship requirement on Intemshala. Currently this service is offered free of charge.

2 Internship search and application: Students from all over India can search and apply for internships and trainings relevant to their coursework and interest free of cost.

3. Internshala Trainings: Internshala offers a variety of online training programs across multiple disciplines (Web development, Java, Hacking) which students can join from the comfort of their homes and learn the skills needed in today's industry.

4. Advertisement: Internshala enjoys a very strong reach among students in campuses all over India and organizations looking to advertise their products, services, events and competitions to college students can avail of customized advertising solutions on various Internshala channels (Website, Newsletter, and Social Media).

CHAPTER - 2

AUTODESK

1. INTRODUCTION

Autodesk, Inc. is an American multinational software corporation that makes software for the architecture, engineering, construction, manufacturing, media, and entertainment industries. Autodesk is headquartered in San Rafacl, California, and features a gallery of its customers' work in its San Francisco building. The company has offices worldwide, with U.S. locations in Northern California Oregon, Colorado, Texas and in New England in New Hampshire and Massachusetts, and Canada locations in Ontario, Quebec, and Alberta.

The company was founded in 1982 by John Walker, a coauthor of the first versions of AutoCAD, the company's flagship computer-aided design (CAD) software. It's AutoCAD and Revit software is primarily used by architects, engineers, and structural designers to design, draft, and model buildings and other structures, Autodesk software has been used in many fields, from the New York Freedom Tower to Tesla electric cars.

Autodesk became best known for AutoCAD but now develops a broad range of software for design, enginering, and enter tainment as well as a line of software for consumers, including Sketchbook, Homestyler. and Pixlr. The company makes educational versions of its software available at no cost to qualified students and faculty through the Autodesk Education Community, and also as a donation to eligible nonprofits through TechSoup Global. Autodesk's digital prototyping software, including Autodesk Inventor. Fusion 360, and the Autodesk Product Design Suite, are used in the manufacturing industry to visualize, simulate, and analyze real-w orld performance using a digital model during the design process. The company's Revit line of software for building information modeling is designed to let users explore the planning, construction, and management of a building virtually before it is built.

" Autodesk's Media and Entertainment division creates software for visual effects, color grading, and editing as well as animation, game development, and design visualization. 3ds Max and Maya are both 3D animation software used in film visual effects and game development.

HISTORY

Autodesk's first notable product was AutoCAD, a computer-aided design application designed to run on the systems known as "microcomputers" at the time, including those running the 8-bit CPM operating system and two of the new 16-bit systems, the Victor 9000 and the IBM Personal Computer (PC). This tool allowed users to create detailed technical drawings, and was affordable to many smaller design, engineering, and architecture companies.

Release 2.1 of AutoCAD, released in 1986, included AutoLISP, a built-in Lisp programming language interpreter initially based on XLISP, This opened the door for third party developers to extend AutoCAD's functionality. to address a wide range of vertical markets, strengthening AutoCAD's market penetration.

AutoCAD Release 13. the company stopped supporting Subsequent to the Unix environment and the Apple Macintosh platform. After AutoCAD Release 14 (R13 was last DOS & Unix release), first shipped in 1997, Autodesk discontinued development under DOS, and focused exclusively on Microsoft Windows,

AutoCAD has grown to become the most widely used CAD program for 2D non- specialized applications. The native file formats written by AutoCAD, DXF and DWG. are also widely used for CAD data interoperability. In 1989, Autodesk's sales grew to over \$100,000.000 after just four operational years.

In the 1990s, with the purchase of Softdesk in 1997, Autodesk started to develop specialty versions of AutoCAD. targeted to broad industry segments, including architecture, civil engineering. and manufacturing. Since the late 1990s, the company has added a number of sig nificant non-AutoCAD.based products, including Revit, aparametric buiklingmodeling application (acquired in 2002 from Massachusetts-based Revit Technologies for \$133 million), and Inventor, an internally developed parametric mechanical design CAD application.

Autodesk introduced its current logo at the TED conference in Long Beach, California on February 26, 2013

2.PRODUCTS

Architecture, engineering and construction-

- AutoCAD Architecture
- AutoCAD MEP
- AutoCAD Civil 3D
- AutoCAD Map3D AutoCAD P&ID
- AutoCAD Plant 3D

Manufacturing - The Company's manufacturing software is used in various manufacturing segments, including industrial machinery, electro-mechanical, tool and die, industrial equipment, automotive components, and consumer products

- Fusion 360 Autodesk Product Design Suite
- Autodesk Factory Design Suite
- Autodesk Inventor Suite
- Autodesk Inventor Professional Suite
- AutoCAD Mechanical
- Autodesk Vault
- Simulation Mechanical

Media and entertainment -

Autodesk Media and Entertainment products are designed for digital media creation, management, and delivery, from film and television visual effects, color grading, and editing to animation, game development, and design visualization.

- Maya
- Softimage
- 3ds Max
- Mudbox
- Smoke
- Flame
- Lustre

AUTOCAD 1. INTRODUCTION

AutoCAD is a commercial computer-aided design (CAD) and drafting software application. Developed and marketed by Autodesk, AutoCAD was first released in December 1982 as a desktop app running on microcomputers with internal graphics controllers. Prior to the introduction of AutoCAD, most commercial CAD programs ran on mainframe computers or minicomputers, with each CAD operator (user) working at a separate graphics terminal. Since 2010, AutoCAD was released as a mobile- and web app as well, marketed as AutoCAD 360.

AutoCAD is used across a wide range of industries, by architects, project managers, engineers, graphic designers, and many other professionals.

AutoCAD is available for English, German, French, Italian, Spanish, Korean, Chinese Simplified, Chinese Traditional. Brazilian, Portuguese, Russian, Czech, Polish and Hungarian, Alban ian (also through additional Language Packs).

The latest version was released on 25 March 2020 as AutoCAD 2021.

Autodesk has also developed a few vertical programs:

- AutoCAD Architecture
- AutoCAD Civil
- AutoCAD Electrical
- AutoCAD eescad
- AutoCAD Map 3D
- AutoCAD Mechanical
- AutoCAD MEP
- AutoCAD Structural Detailing
- AutoCAD Utility Design
- AutoCAD P&ID
- AutoCAD Plant 3D for discipline-specific enhancements

2. AUTOCAD WINDOW

Once the AutoCAD 2014 window is active, it should appear as shown on the image shown below. However if you look at the upper left hand comer there is a button with the letter (A) written in red. That is called the application menu of the AutoCAD software. At the right of this button, there is the phrase "3D modeling". This means that the active workspace is 3D modeling.

Application Menu

This provides the user with file options like save, open, print.

Menu bar

The menu bar appears just below the title bar of the AutoCAD 2014 window, It has Such tabs as home, solid. surface. mesh and view among others for the case of 3D work space. If you switch to 2D Drafting & Annotation you find other tabs relevant to that workspace. Depending on which tab you are on, you will see a collection of tool icons just below it which are organized into panels. The entire collection of tool icons is referred to as the ribbon. As a result the tabs on the menu bar are called ribbon

3. Ribbon

This is a collection of tool panels representing groups of tools and features where you will be selecting tools to draw, edit, or perform other functions. It occurs immediately below the menu bar. Clicking on any of the tabs on the menu bar will give you a different ribbon.

4.Drawing Area

This is a virtual sheet or modeling environment where your designs appear. It boundless area on which your designs are created on a 1:1 scale regardless of their actual life size. The drawing area is also called the canvas. In the default condition, the drawing area will have three icons on display:

i. The user coordinate system icon at the bottom left corner.

ii. The cross hairs or drawing cursor which may be at any position on the screen depending on whether the user has touched the mouse or not.

iii. The view cube at the top right corner. This is very useful in 3D drawing because it facilitates viewing the object from multiple directions.

5. Quick Access toolbar

This includes the basic file-handling functions that you find in virtually all windows application programs. It occurs at the immediate right of the application menu. It carries such functions as workspace switching and title, new file, open file, save and undo among others.

Info Center

This is AutoCAD's online help facility. If you are online type a query there in case you get stuck.

UCS

UCS stands for User CoodinateSystem. In the low er left comer of the draw ing area. you see L shaped arow. This is the UCS icon. which tells you vourorientition in the drawing This icon becomes helpful as vou start to work wath complex 2D draw ings and 3D models. The X and Y anows indicate the X and Y axes of vourdr awing The liule square at the hase of the anows tells vou that you re an w hat Is called the WorldCoordinate System (WCS). Whenever you launch AutoCAD you will be in the world coordinate system (WCS).

Command Window.

It's located just below the drawing area. As you type in commands on the command line, or pick commands on the ribbon panels, a message is displayed on the command window telling you what to do next. When you issue any command it may also display a list of options related to that command. By so doing it prompts you on your next move. Thus it is also known as the command prompt. The command window and the ribbon complement each other i.e. you can type commands on the command line or click on the ribbon icons. However the command prompts that appear on the command window prevent the user from getting confused.

Status Bar

The status bar is a thin strip of the AutoCAD window found between the command window and the taskbar. To the extreme left it carries the coordinate readout which indicates to the user the curent position of the cursor. Towards the right next to the coordinate readout is the drawing aids panel which carries such tools as object snap, object snap tracking, dynamic UCS and polar tracking among others. These aids assist the user in managing snap and tracking actions. They are activated or

deactivated by switching them on or off respectively. To the extreme right of the status bar we find another panel which contains the model and layout tabs, annotation scale and workspace switching tool (gear wheel icon) among others.

3. <u>SELECTING THE WORKSPACE</u>

A workspace is a task-oriented drawing environment oriented in such a way as to provide you with only the tools and interface elements necessary to accomplish the tasks relevant to that environment. You can switch between workspaces by using the Workspace Switching Tool. You can also customize the workspace the way you want and then save it. It will be appearing on the list of workspaces during switching and you can select it as an option. Work space switching tool takes the form of a gear wheel O located at the bottom right hand comer of the active window Clicking on it produces a drop down list of other alternative workspaces, Clicking on either changes the workspace to the selected choice. Alternatively you can switch the workspace by clicking on the downward arrow besides the name of the curent workspace on the quick access toolbar.

4. FILING AND DATA INPUT

AutoCAD 2014 file operations are similar to the file operations in any other Windows program. The general file handling commands include file saving, file opening, file closing and printing of drawings.

I. OPENING FILES

There are three ways to open a drawing in AutoCAD.

- Using Application Menu
- Click on Application Menu> Open
- On the select file dialogue box that appears, browse through the folders the Look in slot. This enables you to navigate to the folder where you've saved your drawing.
- Clicking on a file allows you to look at a preview of the drawing.
- Select OPEN.
- Using the Quick Access Toolbar
- Click on File pull down menu> Open
- At the Select file dialogue box, browse through to the folder in the Look in slot. Clicking on a file allows you to look at a preview of the drawing.
- Now you can click Open in the select file dialogue box.
- ➢ Using the command line
- At the command prompt on the command line, type Open and enter.
- At the Select file dialogue box. brow se through to the folder in the Look in slot. Clicking on a file allows you to look at a preview of the drawing.
- Select open

II. FILE SAVING

> To save a drawing for the first time

The Save Drawing dialogue box appears when you are saving a drawing for the first time. You are the required to navigate through the folders in the save in slot to select the folder in which you want to save your drawing. Type in the file name and then click save.

If you modify a drawing you may wish to save it again but retaining the original template. In this case select save as from the file pull down or the application menu. Give it a name that signifies its current status ie, taking into account the changes. Click save.

> Saving a File as You Work
It's a good idea to save your file periodically as you work on it. As with any Windows program, you can save it under its original name by click on the Save tool on the Quick Access toolbar or under a different name by choosing Save As from the Application menu, thereby creating a new file. –

Making Changes

Coming up with certain drawings may not take place in one pass. Some will require modifications at virtually every stage. Others involve a series of iterative stages before settling on the final copy. In these circumstances, AutoCAD offers the required flexibility as opposed to manual drawing. To keep track of all the modifications, the Save As tool is very essential

II. CLOSING A FILE

Simply click on the X button on the top right corner of the AutoCAD window to close a drawing. A dialogue box appears asking whether to save the changes on the drawing. Sekect yes to save the changes and no it you don't want to effect the changes. How ever it's usually a goiklpracuce to save your files before closing them.

5. COORDINATES ENTRY

1. OVERVIEW

When a command prompts you for a point, you can use the mouse to specify a point, or you can enter a coordinate value at the command prompt. If the dynamic input is switched you can enter coordinate values in tooltips near the cursor. Twodimensional coordinates can be entered as either Cartesian (X, Y) or Polar coordinates

Cartesian Coordinate System

A Cartesian coordinate system has three axes, X, Y, and Z when you enter coordinate values, you indicate a point's distance in units and its direction (+ or -) along the X, Y, and Z axes relative to the coordinate system origin (0,0,0). In 2D, you specify points on the XY plane, also called the work plane. The X value of Cartesian coordinate specifies the horizontal distance, and the Y value specifies the vertical distance. The origin point (0, 0) indicates where the two axes meet.

Polar Coordinate System

Polar coordinates use a distance and an angle to locate a point.

Absolute and Relative Coordinates

• Absolute coordinates

Represents a specific point in the current work plane relative to the origin point (0,0). To enter an absolute coordinate, type the values as a Cartesian coordinate (X.Y) or Polar coordinate (distance, angle).

• Relative coordinate

A relative coordinate is a point specified with reference to the last point specified. We emphasize that it is with reference to your last specified point and not to the origin. This is the distinguishing aspect between relative and absolute coordinates.

IV. Dynamic Input

When dynamic input is on, tooltips display information near the cursor as it moves. It is called dynamic input because the information moving with the cursor is updated with the motion of the cursor. If you type the X value and press tab, the X field (box) displays a lock icon. The Y field is active and you can enter its value. If you type the X value and press enter, the Y value is ignored and AutoCAD interprets it as direct

6 <u>NAVIGATION TOOLS OBJECT DISPLAY</u> I.Overview

When drawing in both 2D and 3D, you may wish to:

- a. Get a closer look (magnify your drawing).
- b. View hidden details
- c. Bring the whole drawing into focus.
- d. View the hidden details of your 3D drawing.

For a, band c use the zoom and pan tools as follows:

i. Zoom in to magnify and zoom out to minimize the size. Zooming out enables you to see the details that are currently spilt out of the screen or make the object smaller in readiness to add details.

ii. The pan tool allows you to drag your drawing to a convenient location on the screen. iii. For d use the orbit tool. It is the tool that enables you to view the objects in your drawing from different angles. It is very essential, when drawing in 3D.

II. Accessing the tools

A. Zoom

- a. To zoom a view with a single dick.
- i. Display a wheel.
- ii. Right-click the wheel and click Steering Wheel Settings.
- iii. In the Steering Wheels Settings dialog box, under Zoom Tool, select Enable Single Click Incremental Zoom.

iv. Click OK.

v. Display one of the Full Navigation Wheels or the mini View Object Wheel.

vi. Click the Zoom wedge. The magnification of the model is increased and you are Zoomed in closer to the model. If you hold down the Shift key while clicking the Zoom wedge, the model is zoomed out or you can hold down the Crl key to zoom in.

- vii. Click Close to exit the wheel.
- b. To zoom a view in and out by dragging.
- i. Display the 2D Navigation wheel, one of the Full Navigation wheels, or the mini View Object wheel.
- ii. Click and hold down the Zoom wedge. The cursor changes to the Zoom cursor.
- iii. Drag vertically to zoom in or out.
- iv. Release the button on your mouse to return to the wheel.
- NB: The mouse wheel is a very convenient way of zooming in and out.

B. Pan

- a. To pan the drawing with the pan tool.
- i. Display the 2D Navigation wheel, one of the Full Navigation wheels, or the mini View Object wheel.
- ii. Click and hold the Pan wedge. The cursor changes to the Pan cursor.

- iii. Drag to reposition the model.
- iv. Release the button on your pointing device to return to the wheel.
- b. To pan using the middle mouse button or the mouse wheel.
- i. Press and hold down the scroll wheel or middle button. The cursor changes to the Pan cursor.
- ii. Drag to reposition the model.
- iii. Release the wheel or button on your mouse.

C. Orbit

- i. Display one of the View Object or Full Navigation wheels.
- ii. Click and hold down the Orbit wedge The cursor changes to the Orbit cursor.
- iii. Drag to rotate the model
- iv. Release the button on vour mouse.

NE: To navigate to the zoom, pan or orbit toos, go to:

- a. View tab> navigate panel>zoomor
- b. View tabo navigate panel> pan or
- c. View tab> navigate paneb orbit.

7. DRAWING UNITS & LIMITS

• UNITS

The format, precision, and other settings used to display coordinates, distances, and angles are set through this dialog box, and are saved in the current drawing. It is recommended that you save these settings to your drawing template files to reduce your setup time when you start a new drawing. The Drawing Units dialog box is displayed. Enter -units at the Command prompt to display options.

• Limits:

When you start a new draw ing. and then decide how much space I need for my drawing. Think of it as the size of vour drawing area. Then you can define draw mgIimitscomectly. Type LIMITS enter. Type 0,0 as lower left comer then type or click the coordinate for upper right corner based on the units which is in Inches or mm.

• Command: LIMITS

Reset Model space limits:

Specify lower left corner or (ON/OFF] <0.0000, 0.0000>:0,0

Specify upper right corner <100.0000, 100.0000>: 300,200

8. COMMANDS

1. OVERVIEW AND DEFINITIONS.

You communicate with AutoCAD by using tools and Menu options. These devices invoke AutoCAD commands.

I. What is a command?

It's a single-word instruction you give to AutoCAD telling it to do something such as draw a line (the line tool in the Draw Ribbon Panel) or erase an object (the Erase tool in the Modify Ribbon Panel). Whenever you invoke a command, by either typing it or selecting a menu option or tool, AutoCAD responds by presenting messages to you in the Command Window and the Dynamic Input display or by displaying a dialogue box. By right clicking during the drawing process, a context-sensitive short cut menu is displayed; i.e. if you are in the middle of a command, this menu displays a list of options specifically related to that command.

II. Command tools.

Move the arrow cursor to the Line tool and rest it there. Do not click yet. Hold it there for a little while and then for a longer while. You will see two tool tips. The first tip gives you the tool tip name and the keyboard command associated with the tool. The second tip gives a brief explanation of how to use the tool. This happens to all other tools on the ribbon. To be able to draw effectively with AutoCAD. you must learn how to tell AutoCAD what you want, and even more important, understand what AutoCAD wants from you.

III. Methods of Accessing/Activating Commands.

- i. Clicking on the command tool/icon on the Ribbon Panels
- ii. Typing the command on the Key board.
- iii. Use of Accelerator Keys. These are special keystrokes that open and activate drop down menu options. Example is Ctrl+S for save and Ctr+C for copy.
- iv. Use of Aliases; (one, two or three letter abbreviations of a ocommand name). These are also typed on the key board.

3. Draw Command Tools

i.Line:

With the Line command you can draw a simple line from one point to another.

ii. Construction Line: The construction line commands creates a line of infinite length which passes through two picked point

iii. Polvline: The Polyline command is similar to the line command except that the resulting object may be composed of a number of segments which form a single object.

iv Rectangle: The Rectangle command is used to dr aw a rectangle whose sides are vertical and horizontal. The posinon and size of the rectangle are defined by picking two diagonal comers.

v Polygon:

The Polygon command can be used to draw any regular polygon V. from 3 sides up to 1024 sides. This command requires four inputs from the user, the number of sides, a pick point for the centre of the polygon, whether you want polygon inscribed or circumscribed and then a pick point which determines both the radius of this imaginary circle and the orientation of the polygon. The polygon command creates a closed polyline in the shape of the required polygon.

vi.Circle:

The Circle command is used to draw circles. There are a number of ways you can define the circle. The default method is to pick the centre point and then to either pick a second point on the circumference of the circle or enter the circle radius at the keyboard.

vii. Arc:

The Are command allows you to draw an are of a circle, There are numerous ways to define an are: the default method uses three pick points, a start point, a second point and an end point.

vii. Spline:

viii. spline is a smooth curve that is fitted along a number of control points. The Fit Tolerance option can be used to control how closely the spline conforms to the control points. A low tolerance value causes the spline to form close to the control points.

ix. Ellipse: The Ellipse command gives you a number of different creation options. The default option is to pick the two end points of an axis and then a third point to de fine the eccentricity of the ellipse

x.Hatch: Hatch is used to add shaded patterns to objects and shapes. You can pick: Pattern, Scale, Angle, Points

4. MODIFY COMMANDS

Offset: Create a duplicate object parallel with the original object. If this object is a Polyline or a Circle, the duplicate shape will be transformed inwards or outwards.

Copy: Copy's one or more objects.

Mirror: Create a mirror image of an object. It is useful for creating symmetrical objects because you can quickly draw half the object and then mirror it instead of drawing the entire object.

Array:Create copies of objects in a rectangular or polar pattern. This is especially useful when you need to duplicate several objects at the same distance from each other.

For rectangular arrays, you control the number of rows and columns and the distance between each. For polar arrays, you control the number of copies of the object and whether the copies are rotated.

Move: Moves one or more objects.

Rotate: You can rotate objects with an absolute or relative angle. When using an absolute angle: Specify the base point and then specify the rotation angle.

Scale: A scale factor greater than 1 enlarges the object. It is also possible to scale an object using a reference object. This method scales the object equally in all directions.

Trim: With the trim option objects can be shortened or lengthened with the edges of other objects. Objects can exactly be fitted between these objects.

Extend: With the extend option you can shorten or lengthen objects to meet the edges of other objects. For example a line can be exactly fitted between objects. Extending an object works in the same way as trimming.

Fillet: You can use the fillet tool to connect two objects with an arc with a specified radius. The inside corner is called a fillet and an outside comer is called a round. Chamfer is almost identical to fillet, but it will make a straight line instead of an arce.

Join: You can use the join option to combine similar objects nto one single object. It is also possible to create complete circles tromares

Explode: Polylines, hatches or blocks can be con verted into individual elements with the explode option. If you explode a polyline every segment will become a separate line.

9. DIMENSION TOOLBAR

You can create several types of dimensions for a variety of object types in many orientations and alignments. The basic types of dimensioning are linear, radial, angular, ordinate, and are length. Use the DIM command to create dimensions automatically according to the object type that you want to dimension. You can control the appearance of dimensions by setting up dimension styles, or by editing individual dimensions in special cases. Dimension styles allow you to specify your conventions quickly and maintain industry or project dimensioning standards.

- 1. Linear Dimensions Linear dimensions can be horizontal, vertical, or aligned. You can create an aligned, horizontal, or vertical dimension with the DIM command depending on how you move the cursor when placing the text.
- 2. Radial Dimensions A radial dimension measures the radius or diameter of ares and circles with an optional centreline or center mark.
- 3. Angular Dimensions Angular dimensions measure the angle between two selected geometre objects or three points.

4. Ordinate Dimensions - Ordinate dimensions measure the perpendicular distances from an origin point called the datum, such as a hole in a part. These dimensions prevent escalating errors by maintaining accurate offsets of the features from the datum.

5. Are Length Dimensions - Are length dimensions measure the distance along an arc or polyline are segment. Typical uses of arc length dimensions include measuring the travel distance around a cam or indicating the length of a cable

6. Baselineand Continued Dimensions Continued dimensions, also called chained dimensions, are multiple dimensions placed end to end.

10. TEXT COMMAND

1. A Multiline Text For longer notes and labels with internal formatting, use multiline text

2. Single-line Text - For short, simple notes and labels, use single-line text.

11. TABLE

A table is a compound object that contains data in rows and columns. It can be created from an empty table or a table style. A table can also be linked to data in a Microsoft Excel spreadsheet.

12. LAYER

Layers are the primary method for organizing the objects in a drawing by function or purpose. Layers can reduce the visual complexity of a drawing and improve display performance by hiding information that you don't need to see at the moment. You gain this level of control by organizing the objects in your drawing on layers that are associated with a specific function or a purpose. It might be helpful to think of layers as clear plastic sheets.

13. BLOCK In AutoCAD,

a block is a collection of objects that are combined into a single named object. The following are some sample blocks at various scales. Some of these blocks are realistic representations of objects, some are symbols, and one of them is an architectural title block for a D-size drawing.

INSERT A BLOCK

Typically, each of these blocks is an individual drawing file, perhaps saved in a folder with similar drawing files. When you need to insert one into your current drawing file, you use the INSERT command (or enter lin the Command window). The first time vou insert the drawing as a block, vou need to click Browse to locate the drawing file, Make sure you organize vour blocks into easy to find folders

CREATE A BLOCK DEFINITION

Instead of creating a drawing file to be inserted as a block. you might want to create block definition directly in your current drawing. Use this method if you do not plan to insert the block into any other drawing. In that case, use the BLOCK command to create the block definition.

14. ISOMETRIC DRAWINGS

A 2D isometric drawing is a flat representation of a 3D isometric projection. This method of drawing provides a fast way to create an isometric view of a simple design. Distances measured along an isometric axis are correct to scale, but because you are drawing in 2D, you cannot expect to extract other 3D distances and areas, display objects from different viewpoints, or remove hidden lines automatically. By using the ISODRAFT command, several system variables and settings are automatically changed to values that facilitate isometric angles. The standard isometric planes, called isoplanes, are as follows:

Right. Aligns snap and grid along 30- and 90-degree axes.

Left. Aligns snap and grid along 90- and 150-degree axes.

Top. Aligns snap and grid along 30- and 150-degree axes.

Choosing one of the three isoplanes automatically causes the crosshairs cursor, and precision drawing and tracking tools to be aligned along the corresponding isometric axes. Therefore, you can draw the top plane, switch to the left plane to draw a side, and switch to the right plane to complete the drawing.

15. 3D MODELING

3D solid primitives are standard shapes which are provided among the ribbon options on the 3D modeling workspace. They include box, wedge, cone, cylinder, sphere, pyramid and torus. The principles of drawing them are similar.

Box: Box command on the toolbar modeling is used to draw 3D models such as cubes and block. Creates a box with sides of equal length.

Cylinder: The cylinder was created using a center point (1), a point on the radius (2), and a point for the height (3). The base of the cylinder is always on a plane parallel with the workplane.

Sphere: Specifies the center point of the sphere. When vou specify the center point. the sphere is positioned so that its central axis is parallel to the Z axus of the current uset coordinate system iUCSDeines the radhus or duncter of the sphere.

Wedge: The direction of the taper is always in the positive X-axis direction of the UCS.

Torus: Specifies the center point of the torus. When you specify the center point, the torus is positioned so that its central axis is parallel to the Zaxis of the current user coordinate system (UCS). Defines the radius of the torus and then define the radius of the tube.

Poly solid: You can create a 3D solid with polysolid just as you would polyline. You can also convert existing 2D objects such as lines, 2D polylines. ares, and circles to 3D solids with a default height, width, and justification

Extrude: Objects can be extruded orthogonally from the plane of the source object, in a specified direction, or along a selected path. You can also specify a taper angle.

Loft: Creates 3D solid or surface in the space between several cross sections. The cross sections define the shape of the resulting solid or surface. You must specify at least two cross sections.

Sweep: Creates a 3D solid or 3D surface by sweeping a 2D object or subobject along an open or closed path.

Revolve: Creates a 3D solid or surface by sweeping an object around an axis. You cannot revolve objects contained within a block or objects that will self-intersect. REVOLVE ignores the width of a polyline and revolves from the center of the path of the polyline.

BOOLEAN OPERATIONS:

Union: Combines two or more 3D solids, surfaces, or regions into a single, composite 3D solid, surface, or region. Select two or more objects of the same type to combine.

Subtract: Creates as a new object by subtracting one overlapping region or 3D solid from another. Objects in the second selection set are subtracted from objects in the first selection set. A single new 3D solid or surface is created

Intersect: With INTERSECT, you can create a 3D solid from the common volume of two or more existing 3D solids, surfaces, or regions. If you select a mesh, you can convert it to a solid or surface before completing the operation. You can extrude 2D profiles and then intersect them to create a complex model efficiently, Select intersect command. Select the two object which intersect and then tap enter.

16. PRINTING AND PLOTTING

Output a drawing layout to a printer, a plotter, or a file. Save and restore the printer settings for each layout. Originally, people printed text from printers and plotted drawings from plotters. Now, you can do both with either.

CONCLUSION

Internshala has a very good market in the internship program. The company is offering good services, which is reflected on the satisfaction of the customer. Majority of the interns are satisfied with the service. This is the only company which provide internship in India. It guides us to help to set up and manage a large project. It makes feel free to adjust the recommendations to suit the way we work.

This report covered the preview of our learning path and study materials. The use of AutoCAD has many advantages. It can help to reduce the time it takes to produce the drawing needed in the work environment. AutoCAD software is the most amazing range of mechanical computer aided design tool. It is now considered to be the best according to industry standards that can be obtained for a wide array of designing, Mechanical Engineering Services and other industrial purposes.

The use of AutoCAD may also be relied on heavily in order to create efficiencies within the industries. We explored different materials ranging from text, tutorials and Youtube videos so as get to grips with the finer details of mastering AutoCAD. We were guided by the fact that there is more to learning AutoCAD than drawing simple figures and lines. It has very vast application in the field of manufacturing, architecture, electrical, and many more. The company Autodesk provides wide range of application and software which reduces the effort to create complex drawing and easy to maintain. With the help of AutoCAD, we can create design very quickly. It improves the quality of the drawing which we can't get by hand drafting. With the help of this software, drawing can be easily modified whenever wanted which reduces the human effort. We can easily transfer files from one place to another in no time which reduces the time.

This software is utilized to provide some useful and practical designing software that will allow users to visualize as well as create prototypes of a product in reality and quick time. AutoCAD software allows developers to give form to their out of the box ideas.

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This is to Certify that Mr./Miss Pawan Meena Student of Class III'd year (P&I) of M.B.M. Engineering College has undergone Practical Training at Kota Super Thermal Power Station, Kota w.e.f. 15th July 2021 to 30th Aug 2021 in various fields of this Power Station. His/Her Performance during training Period is found Satisfactory.

Kota.

Date: 02-09-2021

Course Co-Ordinator KSTPS, RRVUNL, Kota.

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Prakash Prajapat

from M.B.M ENGINEERING COLLEGE, has successfully completed a six weeks online training on **SOLIDWORKS**. The training consisted of SolidWorks- Introduction, Interface and Sketching, Applying Features and Material, SolidWorks Assembly, SolidWorks Drawing and Portfolio Building and Final Project- Air Piston-Cylinder Assembly modules.

> In the final assessment, Prakash scored 50% marks. We wish Prakash all the best for the future endeavours.

ans

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-07-28

Certificate no. : C3236CCE-1877-555F-370E-FA2360A95ACF



Prateek Panwar

from MBM Engineering College, Jodhpur, Rajasthan, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules.

We wish Prateek all the best for the future endeavours.

ours

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-07-17

Certificate no. : DA50774E-FA7A-B57A-2803-18DB26A9B972





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Date: 03/09/2021

TO WHOM IT MAY CONCERN

This is to certify that Mr. Pushpender Bajaj, student of Production and Industrial Engineering 3rd Year, MBM Engineering College, Jodhpur has successfully completed 45 days of summer internship from 01.07 2021 to 14.08 2021

During this period of his internship program, he had been exposed to different processes and was found diligent, hardworking and inquisitive.

We wish him every success in his life and career.

d Signatory

(Authorised Signatory) For BURANA NOUSTRIES



Ref;-GEPL/SSCTPP/WEXP./18

Date- 11th Aug 2021

To whom it may concern

This is certify that <u>Mr. Rahul Choudhary S/o Mr. Kishan lal Choudhary</u> Student of B.E. in Production & Industrial from M.B.M. Engineering Collage, Jodhpur has under gone industrial training at <u>M/s Gill</u> <u>Engineering Pvt. Ltd.</u>, RRVUNL, SSCTPP, Suratgarh from 28 June 2021 to 11 August 2021 as a part of his course curriculum. He has successfully completed his training of 45 days at our workplace following covid guidelines. During this period his conduct was satisfactory and result oriented.



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Rishabh Sankhla

from M.B.M. Engineering College, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. Rishabh scored 100% marks in the final assessment and is a top performer in the training. We wish Rishabh all the best for the future endeavours.

ans

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-08-03

Certificate no. : BCB37795-67C6-45BC-4AD6-038DF1F69EF7



Seema Suthar

from MBM ENG.COLLEGE, Jodhpur, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules.

We wish Seema all the best for the future endeavours.

aus

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-07-30

Certificate no. : D62AA33D-54D9-0A5A-29EA-5FB6EB587DBB



Shivani Singhal

from M. B. M ENGINERRING COLLEGE, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Shivani scored 44% marks. We wish Shivani all the best for the future endeavours.

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Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-09-07

Certificate no.: 2F70240D-79BC-9A3E-E08A-0FCA56A5AD0F

A Training Report on

3-D PRINTING

Shubham Kumawat (19UPIE1317)

Third Year (6th Semester) B.E. (Production and Industrial Engineering) Session 2020-21



CERTIFICATE

This is to certify that the work contained in this report entitled "**3-D PRINTING**" is submitted by Mr. **Shubham Kumawat**, (Roll. No: 19UPIE1317) to the Department of production and Industrial Engineering, M.B.M. Engineering College, Jodhpur, for the partial fulfilment of the requirements for the degree of Bachelor of Engineering in Production and Industrial Engineering.

He has carried out his work under my supervision. This work has not been submitted else-where for the award of any other degree or diploma.

The project work in my opinion, has reached the standard fulfilling of the requirements for the degree of Bachelor of Engineering in Production and Industrial Engineering in accordance with the regulations of the Institute.

Dr.Milind Kumar Sharma (Head Of Department) Production and Industrial Engineering

DECLARATION

I, Shubham Kumawat hereby declare that this seminar/project titled "3-D PRINTING" is a record of original work done.

I, further certify that this work has not formed the basis for the award of the Degree/Diploma/Associate ship/Fellowship or similar recognition to any candidate of any university and no part of this report is reproduced as it is from any other source without appropriate reference and permission.

> Shubham Kumawat 6TH Semester, Roll No. – 19UPIE1317

ACKNOWLEDGEMENT

The internship opportunity I had with INTERNSHALA was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me though this internship period. I express my deepest thanks to Tayseer Almattar, 3D Printing specialist, founder of TforDesign and Ideabee Design co-chair for taking part in useful decision & giving necessary advices and guidance and arranged all facilities to make learning experience easy. I choose this moment to acknowledge his contribution gratefully, for their careful and precious guidance on 3D printing which was extremely valuable for my study both theoretically and practically.

INTRODUCTION

3D printing, is the construction of a 3- dimensional object from a CAD model or a digital 3D model. Deposited, joined or solidified under computer control to create a three- dimensional object, with material being added together (such as plastics, liquids or powder grains being fused together), typically layer by layer.

Our interaction with 3d printing:-

- \Box As an operator > operating industrial 3d printers (specific training)
- \Box As a maker
- \Box As a designer (making 3d designs)
- \Box As a manager (3d printing can add value to an organization)

History of 3D printing:-

 \Box Earliest model by Dr hideo kadama (Japan).

 \Box First patent for 3d printing in 1986 for SLA (Stereo-lithography) to 3d modelling.

□ SLS (Selection Laser Sintering) manufacturing at 1986 to university of Texas.

- □ Fused deposition modelling (FDM) at 1992 to Stratesis.
- \Box 3d printing techniques at 1995 to MIT.

Principles and Technologies:

Preparing 3d models:-

- Print Journey:-
- 1. Preparing model in a 3d CAD software.
- 2. Exporting the 3d model from the CAD software.
- 3. Importing our CAD file into the slicer software and generating g-code.
- 4. Watching then extracting the print.
- 5. Post printing processing.
- 6. Additional topics.

Printing-

Before printing a 3D model from an STL file, it must first be examined for errors. Most CAD applications produce errors in output STL files, of the following types: A step in the STL generation known as "repair" fixes such problems in the original model. Generally STLs that have been produced from a model obtained through 3D scanning often have more of these errors as 3D scanning is often achieved by point to point acquisition/mapping. 3D reconstruction often includes error.

Finishing-

Though the printer-produced resolution is sufficient for many applications, greater accuracy can be achieved by printing a slightly oversized version of the desired object in standard resolution and then removing material using a higher-resolution subtractive process.

Materials-

Traditionally, 3D printing focused on polymers for printing, due to the ease of manufacturing and handling polymeric materials. However, the method has rapidly evolved to not only print various polymers but also metals and ceramics, making 3D printing a versatile option for manufacturing. Layer-by-layer fabrication of three-dimensional physical models is a modern concept that "stems from the ever-growing CAD industry, more specifically the solid modeling side of CAD.

3D Scanning:-

□ It is process of analyzing and collecting data from an object in the real world and turning those into digital 3d model.

□ 3d scanning with 2d printing is used in Archaeology, Reverse engineering and Medicine.

□ Archaeology:- 3d scanned and printed artefacts can be used for education, restoration and research.

 \Box Reverse engineering:- it is the process of reconstructing existing object. This could be for educational purposes, design improvement purposes or archiving.

□ Medicine:- 3D human replicas are used for teaching and research. Making better fitting prosthetics, hearing aids and teeth alignment support.

□ Difference between 3d scanning and 3d printing:

3d scanning converts Physical object -----> Digital object 3d printing converts Digital object -----> Physical object

Can also be used in Virtual Reality, Education and architecture

3-D PRINTING Processes :

There are many different branded additive manufacturing processes, that can be grouped into seven categories:

1. VAT Photopolymerisation

Vat polymerisation uses a vat of liquid photopolymer resin, out of which the model is constructed layer by layer. An ultraviolet (UV) light is used to cure or harden the resin where required, whilst a platform moves the object being made downwards after each new layer is cured.



2. Material Jetting

Material jetting creates objects in a similar method to a two dimensional ink jet printer. Material is jetted onto a build platform using either a continuous or Drop on Demand (DOD) approach.

Material is jetted onto the build surface or platform, where it solidifies and the model is built layer by layer. Material is deposited from a nozzle which moves horizontally across the build platform. Machines vary in complexity and in their methods of controlling the deposition of material. The material layers are then cured or hardened using ultraviolet (UV) light.

As material must be deposited in drops, the number of materials available to use is limited. Polymers and waxes are suitable and commonly used materials, due to their viscous nature and ability to form drops.

3. Binder Jetting

The binder jetting process uses two materials; a powder based material and a binder. The binder acts as an adhesive between powder layers. The binder is usually in liquid form and the build material in powder form. A print head moves horizontally along the x and y axes of the machine and deposits alternating layers of the build material and the binding material. After each layer, the object being printed is lowered on its build platform.

Due to the method of binding, the material characteristics are not always suitable for structural parts and despite the relative speed of printing, additional post processing (see below) can add significant time to the overall process.

As with other powder based manufacturing methods, the object being printed is selfsupported within the powder bed and is removed from the unbound powder once completed. The technology is often referred to as 3DP technology and is copyrighted under this name.

4. Powder Bed Fusion

The Powder Bed Fusion process includes the following commonly used printing techniques: Direct metal laser sintering (DMLS), Electron beam melting (EBM), Selective heat sintering (SHS), Selective laser melting (SLM) and Selective laser sintering (SLS).

Powder bed fusion (PBF) methods use either a laser or electron beam to melt and fuse material powder together. Electron beam melting (EBM), methods require a vacuum but can be used with metals and alloys in the creation of functional parts. All PBF processes involve the spreading of the powder material over previous layers. There are different mechanisms to enable this, including a roller or a blade. A hopper or a reservoir below of aside the bed provides fresh material supply. Direct metal laser sintering (DMLS) is the same as SLS, but with the use of metals and not plastics. The processes by way of using a heated thermal print head to fuse powder material together. As before, layers are added with a roller in between fusion of layers. A platform lowers the model accordingly.

5. Metal Extrusion

Metal Extrusion is a **metal forming** manufacturing process in which a cylindrical billet inside a closed cavity is forced to flow through a die of a desired cross-section. These fixed cross-sectional profile extruded parts are called "**Extrudates**" and pushed out using either a mechanical or hydraulic press. The process which was first patented by Joseph Bramah was first used to extrude lead pipes by Thomas Burr. Most commonly extruded materials are Aluminium, Copper, Steel, Magnesium, and Lead. Plastics and ceramics are also extruded extensively but not discussed in this article. Extrusion is a metal forming process in which metal or work piece is forced to flow through a die to reduce its cross section or convert it into desire shape. This process is extensively used in **pipes and steel rods manufacturing**. The force used to extrude the work piece is compressive in nature

6. Directed Energy Deposition (DED)

It is a 3D printing method which uses a focused energy source, such as a plasma arc, laser or electron beam to melt a material which is simultaneously deposited by a nozzle. As with other additive manufacturing processes, DED systems can be used to add material to existing components, for repairs, or occasionally to build new parts.

The DED process is known by other names, including Laser Engineered Net Shaping (LENS), Direct Metal Deposition (DMD), Electron Beam Additive Manufacturing (EBAM), Directed Light Fabrication, and 3D Laser Cladding, depending on the exact application or method used.

7. Sheet lamination 3D printing

Sheet lamination is one of the **seven recognized** 3D Printing methods. The process uses sheets of building material which are cut through laser or knife and the sheets are joined one after the other either by using an adhesive or by wielding the laser cut sheets together to form the 3D object. The process is also called ultrasonic additive manufacturing (UAM) in case the building material used is metal sheets. The variation of the process in which paper is used for making the 3D models is known by the name – Laminated Object Manufacturing (LOM).

The apparatus for UAM variation of the sheet lamination process has a cylindrical sonotrode to which the material sheet is coiled. The sonotrode is rotated to feed the material sheet onto a building platform. If metal sheets are used as building material they are wielded together before coiling over the sonotrode. Similarly in LOM variation of the process, paper sheets are glued together using an adhesive. The feed material sheet is cut by laser or knife on a layer by layer basis and passed to CNC machining for separating each model/part. Each layer is laser cut and joined to the preceding layer by wielding (in case of UAM) or applying adhesive (in case of LOM). The Laminated Object Manufacturing involves an additional cross hatching process remove the extra build to ups.

"Fused Deposition Modelling"

What is FDM printing?

FDM 3D printing is a technology that works both horizontally and vertically, where an extrusion nozzle moves over a build platform. The process involves the use of thermoplastic material that reaches melting point and is then forced out, to create a 3D object layer by layer. As the design takes shape, it is clear to the see each layer as a horizontal cross section. Following the completion of one layer, the nozzle of the printer is lowered in order for the next layer of plastic to be added to the design. Once the object has been created, the materials that are used to support the object can then be removed

How does FDM 3D printing work?

In the same way as other forms of 3D printing, FDM uses a digital design that is uploaded to the 3D printer. There are a lot of different polymers used, such as ABS, PETG, PEI and PEEK. These take the shape of plastic threads that are fed from a coil and through a nozzle. The filaments are melted and fed onto the base, known as a build platform or table with the base and the nozzle, both of which are controlled by a computer. The computer works by translating the object and its dimension into co-ordinates that make it possible for the nozzle and base to follow. As the nozzle moves across the base, the plastic cools and becomes solid, forming a hard bond with the previous layer. At this point the printhead goes up in order for the next layer of plastic to be laid. As always, 3D printing is efficient and fast but the time it takes to create an object does depend on its size. Smaller objects that are around several cubic inches can be created quickly but larger, more complex object will take longer

What is FDM 3D printing used for?

The use of 3D printing is highly publicised but what is FDM 3D Printing or FFF 3D printing used for? Many different industries choose to use FDM 3D printing. Industries including automotive and a wide range of consumer goods manufacturers. They use FDM because it helps to aid their product development, their prototyping and their manufacturing process. Manufacturers of certain products use FDM 3D printing because of the thermoplastic that is used during development is perfect for anything ranging from Children's toys or even sports equipment.

What is FDM 3D printing used for?

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Prototyping

Prior to a product being taken to the mass market, it is important that objects are tested vigorously. Therefore, the use of thermoplastics is ideal for creating prototypes because they can endure heat, chemicals and mechanical stress. Along with this, as FDM printing has the ability to create extremely detailed objects, it makes it the ideal choice for those industries that use need to create parts that need to be tested for fit and form.

However, it is not just about prototyping because FDM is also used to create enduse parts, especially small parts that have a lot of details. In fact, it is common for thermoplastics to be used for food packaging and drug packaging and so, it is a popular technology in the medical industry. Here you can find some case studies about the use of 3D printing.

For businesses looking for a viable option that can deliver results, FDM 3d printing offers the perfect solution. It is competitively priced and the best FDM 3D printers can deliver results efficiently and effectively.

What are the advantages of FDM 3D printing?

1. Easy handling

The 3D printing industry is constantly evolving. There is no doubt that it will become the main way to create parts and objects in the future. It simplifies the manufacturing process and enables manufacturers to test, alter and finally produce a final product in timeframe that is faster than traditional methods. Easy handling is one of the great benefits of FDM or FFF 3D printing, make sure you have the best FDM 3D printer for your company goals.

2. Cost efficient

For any business, cost is everything because it eats into the bottom line and affects profits and so, keeping costs low is vital. Therefore, FDM 3D printing, provides a viable solution that is designed to help keep manufacturing costs low. Of course, there is the prototype development costs to keep down, the testing costs and the final production costs. Through a comparison with other types of 3D printing techniques, FDM 3D printing is also cheaper than other methods. The materials used are cheaper than the ones used in SLS and SLA 3D printing.

3. Flexibility in material choice

Often, many businesses are governed by the materials they use during the manufacturing process. However, when it comes to FDM or FFF 3D printing, there is a broad range of materials available and all are accessible and economical. It is also possible for a selection of materials to be used at the same time which helps to create complex objects while it is also possible to print using a wide range of colours offering versatility and flexibility.

4. Less post-processing

Time is money but FDM 3D printing is an option that optimises production times and that saves money. As there is less post-processing required, it means that there is no need to think about how you use expensive liquids used in other methods, it simply creates a product that is ready to use.

Accessibility is vital for businesses if they are to take advantage of FDM 3D printing. Whether a business is looking for a 3D printing solution for the first time or simply looking for a feasible printing option that is readily-available, FDM 3D printing is a great option. The technique is efficient, easy to understand and the best FDM 3D printers deliver readily-available results with very little fuss. So after comparing technologies you can start comparing printers to find your best FDM 3D printer, meeting your requirements.

Anatomy of an FDM 3d printer:-

- The common parts that make an FDM desktop 3D printer:
 - 1. Print bed: Heated or non-heated, detachable or non-detachable, moving (make z-axis) or non-moving and bed adhesion extras (blue painters tape, glue, etc). The print bed should be levelled with the extruder if not print will fail.
 - 2. The filament: -Rolls of plastic used by printer as to print (thin wire of plastic is known as spool). Standard diameters are 1.75 or 2.85 mm.
 - 3. Material: Commonly used are PLA and ABS, less common materials are nylon and composites; once we know the material to be used we must know recommended bed temperature, extruder temp and bed adhesion.

4. The extruder: It is the part which takes raw material from filament, and melts and arranges it to form an object. Its Parts are-

- Motor (which drive, drive gears),

- Drive gears (pushes the material towards the hot end commonly used are hobbled gears),

- Heating block,
- Thermostat (control temp) and
- Nozzle (melted material comes out common 0.4 mm) and

- Cooling fans (first fan cools heat from heat sink to prevent heat to travel backward and second fan cools the extruded material to solidify on print).

- 4. The mechanical moving parts: stepper motors, rods and bearings
- 5. The electronic and electrical components- power supply, controller board and drivers.
- 6. The frame
- 7. User interface additions: communicate with printer with small screen.

Uniqueness in mass scale:-

Mass Customization:-

- Much of industrial design influenced by mass production. Automation integrated with conventional manufacturing.

- Making parts with 3d printing requires more manual work compared to conventional methods. There are automated 3d printing FDM machines.

- In future more technologies will integrate with 3d printing like artificial intelligence, Internet of things and flexible manufacturing to product mass production of 3d prints.

Faster Cheaper bigger:- Bigger:-

- one of the biggest announced 3d printer have a working volume of about 14 meters long, 7 meters wide(23ft.) and 3 meters in height (10ft.).

- In aerospace, construction and architecture there is use of bigger printed objects.

Faster:-

- Till date 3d printing is generally slow compared to traditional manufacturing.

- In future emerging new technologies will be faster than present. Cheaper:-

- SLA 3D printing is becoming rapidly cheaper.

- In future improvements in Materials will bring ease of use and print quality.
Advancements in 3d printing: -

4D printing:-

- It is concept a 3d printed object will deform based on the external condition.

- There is a self-folding 3d printed strand by the self-assembly lab, MIT & Stratasys.

- It requires development of Smart Materials.
- It can enable smart pipes with imbedded safety features.
- Smart material can enable making smart, shifting sport shoes.
- Smart implants in medical field can be used.



Certificate of Training

Sikandar

from MBM Engineering College, Jodhpur, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Sikandar scored 88% marks. We wish Sikandar all the best for the future endeavours.

aus

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-08-02

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Certificate of Training

Sourav Mazumdar,

has successfully completed a eight weeks online training on **Ansys**. The training consisted of Introduction to Finite Element Analysis (FEA), Understanding Concepts at Work & Installing Ansys, Introduction to Ansys Software, Static Structural Analysis, Modal, Thermal, & Buckling Analysis, Case Studies and Final Project modules. In the final assessment, Sourav scored 57% marks. We wish Sourav all the best for the future.

avers

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-06-28

Certificate no.: 2E0EB64D-E5E4-9F1C-57BC-65A43AB56D53

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Certificate of Training

Teekam Singh

from MBM ENGINEERING COLLEGE, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Teekam scored 80% marks. We wish Teekam all the best for the future endeavours.

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Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-09-01

Certificate no. : BC528157-F403-DE1A-769B-0751E873DA6A

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SUMMER TRAINING REPORT ON

3D PRINTING

At

INTERNSHALA Submitted In the partial fulfillment of **Bachelor of Engineering**



Department of **Production and Industrial Engineering** 2021-2022

Submitted by : SUKHA RAM

Roll number : 19UPIE1320 6th semester (3rd year)

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A formal statement of acknowledgement is hardly sufficient to express my gratitude towards the personalities who have helped me in training. First and foremost I take this opportunity to express my sincere gratitude & sincere thanks Mr. Tayseer Almattar, Trainer (3D Printing) at Internshala. We are very thankful to Internshala brining out all success as we take our first step into the new world of technology. I hereby convey my thanks to Dr. Milind Kumar Sharma, Head of Department of Production and Industrial Engineering and all the faculty members of Production and Industrial Engineering Department for their valuable help and constant cooperation. I also want to thanks to my parents for providing me financial assistance and moral support rendered by my parents in making this effort a success. All this has become a reality because of their blessings.

NAME:-SUKHA RAM ROLL NO. :- 19UPIE1320 *6th semester (3rd year)*

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INTRODUCTION

A 3D printer uses a virtual, mathematical model to construct a physical artifact. For example, a designer in the process of creating a new laptop can use a software package to create a threedimensional model of her creation, that can be manipulated and viewed on the computer screen. The 3D printer can take the symbolic representation of this new object and use it to build a full-size, physical model that can be held and manipulated, helping the designer to better understand the strengths and limitations of her design.

An architect can turn the plans for a building into a three-dimensional model and then "print" a scale model to help him understand and communicate his design. An archaeologist can print duplicates of an important, but fragile, tool so that her students can hold it in their hands and better understand how it might have been used by an ancient civilization. A biochemist can print accurate models of DNA molecules, enlarged by many orders of magnitude, to helpstudents and researchers better understand nature by engaging their hands as well as their eyes in comprehending the geometry of nature. And a student of the arts can create a unique object that would be difficult or impossible to build by hand.

We will not here consider other types of computer-controlled manufacturing, such subtractive machines, which work by cutting away from a larger piece of material in order to build a part. Additive rapid prototyping machines were first introduced twenty years ago, when 3D Systems introduced the Stereo lithography, or SLA machine. While these machines were remarkable for their ability to create complex parts, they were large, expense, and difficult to operate.

1. History Of 3d Printing

Early AM equipment and materials were developed in the 1980s.In 1984, Chuck Hull of 3D Systems Corporation, invented a process known as stereo lithography, in which layers are added by curing photopolymers with UV lasers. Hull defined the process as a "system for generating three-dimensional objects by creating a cross-sectional pattern of the object to be formed. He also developed the STL (Stereo Lithography) file format widely accepted by 3D printing software as well as the digital slicing and infill strategies common to many processes today. The term *3D printing* originally referred to a process employing standard and custom inkjet print heads. The technology used by most 3D printers to date—especially hobbyist and consumer- oriented models—is fused deposition modeling, a special application of plastic extrusion.



Chuck Hull the father of 3D printing

AM processes for metal sintering or melting usually went by their own individual names in the 1980s and 1990s. Nearly all metalworking production at the time wasby casting. fabrication, stamping, and machining; even though plenty of automation was applied to those technologies (such as by robot welding and CNC), the idea of a tool or head moving through a 3D work envelope transforming a mass of raw material into a desired shape layer by layer was associated by most people only with processes that removed metal (rather than adding it), such as CNC milling, CNC EDM, and many others. The umbrella term additive manufacturing gained wider currency in the decade of the 2000.as the various additive processes

matured and it became clear that soon metal removal would no longer be the sole occupant of the aforementioned paradigm. It was during this decade that the term subtractive manufacturing appeared for the large family of machining processes with metal removal as their common theme. However, at the time, the term 3D printing still referred only to the polymer technologies in most minds, and the term AM was likelier to be used in metalworking contexts than among polymer/inkjet/stereo lithography enthusiasts.

By the early 2010s, the terms 3D printing and additive manufacturing developed senses in which they were synonymous umbrella terms for all AM technologies. Although this was a departure from their earlier technically narrower senses, it reflects the simple fact that the technologies all share the common theme of sequential-layer material addition/joining throughout a 3D work envelope under automated control. (Other terms that have appeared, which are usually used as AM synonyms have beendesktop manufacturing, rapid manufacturing [as the logical production-level successor to rapid prototyping], and on-demand manufacturing [which echoes on-demand printing in the 2D sense of printing].) The 2010s were the first decade in which metal parts such as engine brackets and large nutswould be grown (either before or instead of machining) in job production rather than obligatory being machined from bar stock or plate. The term subtractive has not replaced the term machining, instead complementing it when a term thatcovers any removal method is needed.

2. General Principles

2.1Modeling

3D printable models may be created with a computer aided design package or via 3D scanner. The manual modeling process of preparing geometric data for 3D computer graphics is similar toplastic arts such as sculpting. 3D scanning is a process of analyzing and collecting digital data on the shape and appearance of a real object. Based on this data, three-dimensional models of the scanned object can then be produced.

Both manual and automatic creation of 3D printable models is difficult for average consumers. This is why several marketplaces have emerged over the last years. Among the most popular are Shape ways, Thing verse, MyMiniFactory and Threading

Printing

Before printing a 3D model from an STL file, it must first be processed by a piece of software called a "slicer" which converts the model into a series of thin layers and produces a G-code file containing instructions tailored to a specific printer. Several open source slicer programs exist, including Skeinforge, Slic3r, KISSlicer, and Cura.

The 3D printer follows the G-code instructions to lay down successive layers of liquid, powder, paper or sheet material to build the model from a series of cross sections. These layers, which correspond to the virtual cross sections from the CAD model, are joined or automatically fused to create the final shape. The primary advantage of this technique is its ability to create almost any shape or geometric feature.

Printer resolution describes layer thickness and X-Y resolution in dots per inch (dpi) or micrometers (μ m). Typical layer thickness is around 100 μ m (250 DPI), although some machines such as the Objet Convex series and 3D Systems' ProJet series can print layers as thin as 16 μ m (1,600 DPI). X-Y resolution is comparable to that of laser printers. The particles (3D dots) are around 50 to 100 μ m (510 to 250 DPI) in diameter.

Construction of a model with contemporary methods can take anywhere from several hours to several days, depending on the method used and the size and complexity of the model. Additive systems can typically reduce this time to a few hours, although it varies widely depending on the type of machine used and the size and number of models being produced simultaneously.

Traditional techniques like injection moldings can be less expensive for manufacturing polymer products in high quantities, but additive manufacturing can be faster, more flexible and less expensive when producing relatively small quantities of parts. 3D printers give designers and concept development teams the ability to produce parts and concept models using a desktop size printer.

Finishing

Though the printer-produced resolution is sufficient for many applications, printing a slightly oversized version of the desired object in standard resolution and then removing materialwith a higher-resolution subtractive process can achieve greater precision. As with the LUMEX Avance-25 and other machines slated for IMTS 2014 IMTS Press Release | International Manufacturing Technology Show

Some additive manufacturing techniques are capable of using multiple materials in the course of constructing parts. Some are able to print in multiple colors and color combinations simultaneously. Some also utilise supports when building. Supports are removable or dissolvableupon completion of the print, and are used to support overhanging features during construction.

3. Current 3d Printing Technologies

Stereo lithography

Stereo lithographic 3D printers (known as SLAs or stereo lithography apparatus) position a perforated platform just below the surface of a vat of liquid photo curable polymer. A UV laser beam then traces the first slice of an object on the surface of this liquid, causing a very thin layer of photopolymer to harden. The perforated platform is then lowered very slightly and another slice is traced out and hardened by the laser. Another slice is then created, and then another, untila complete object has been printed and can be removed from the vat of photopolymer, drained of excess liquid, and cured. Fused deposition modeling - Here a hot thermoplastic is extruded from a temperature-controlled print head to produce fairly robust objects to a high degree of accuracy.

Selective laser sintering (SLS)

This builds objects by using a laser to selectively fuse together successive layers of a cocktail of powdered wax, ceramic, metal, nylon or one of a range of other materials.

Multi-jet modeling (MJM)

This again builds up objects from successive layers of powder, with an inkjet-like print head used to spray on a binder solution that glues only the required granules together. The V-Flash printer, manufactured by Canon, is low-cost 3D printer. It's known to build layers with a light- curable film. Unlike other printers, the VFlash builds its parts from the top down.Desktop Factory is a startup launched by the Idea lab incubator in Pasadena, California.

Inkjet 3D printing

It creates the model one layer at a time by spreading a layer of powder (plaster, or resins) and inkjet printing binder in the cross-section of the part. It is the most widely used 3-D Printing technology these days and the reasons beyond that are stated below.

This technology is the only one that

 \Box Allows for the printing of full color prototypes.

Unlike stereo lithography, inkjet 3D printing is optimized for speed, low cost, and ease-of-use.

4. There is two major type Manufacturing

Additive Manufacturing

Creating A Form
Conserves Resources
Efficient
3D Printing



Additive manufacturing

Subtractive Manufacturing

Uncovering A Form

O Carving A Sculpture

Chiseling A Statue

Wasteful

Time Consuming



Subtractive Manufacturing

5. Processes

Several different 3D printing processes have been invented since the late 1970s. The printers were originally large, expensive, and highly limited in what they could produce.

A large number of additive processes are now available. The main differences between processes are in the way layers are deposited to create parts and in the materials that are used. Some methods melt or soften material to produce the layers, e.g. selective laser melting(SLM) or direct metal laser sintering (DMLS), selective laser sintering (SLS), fused deposition modeling (FDM), while others cure liquid materials using different sophisticated technologies, e.g. stereo lithography (SLA). With laminated object manufacturing (LOM), thin layers are cut to shape and joined together (e.g. paper, polymer, metal). Each method has its own advantages and drawbacks, which is why some companies consequently offer a choice between powder and polymer for the material used to build the object. Other companies sometimes use standard, off- the-shelf business paper as the build material to produce a durable prototype. The main considerations in choosing a machine are generally speed, cost of the 3D printer, cost of the printed prototype, cost and choice of materials, and color capabilities.

Printers that work directly with metals are expensive. In some cases, however, less expensive printers can be used to make a mould, which is then used to make metal parts.

| Туре | Technologies | Materials |
|-----------|--|--|
| Extrusion | Fused deposition modeling (FDM) | Thermoplastics (e.g. PLA, ABS), HDPE, eute ctic metals, edible materials, Rubber (Sugru),Modeling clay, Plasticine, RTV silicone, Porcelain, Metal clay (including Precious Metal Clay) |
| Wire | Electron Beam Freeform Fabrication(EBF) | Almost any metal alloy |
| Granular | Direct metal laser | Almost any metal alloy |

Table 1 materials and technologies

| | sintering (DMLS) | |
|--|---|--|
| | Electron-beam melting (EBM) | Almost any metal alloy including Titanium alloys |
| | Selective laser melting (SLM) | Titanium alloys, Cobalt Chrome alloys, Stainless Steel, Aluminium |
| | Selective heat sintering (SHS) | Thermoplastic powder |
| | Selective laser sintering (SLS) | Thermoplastics, metal powders, ceramic powders |
| Powder bed and inkjet head 3D printing | Plaster-based 3D printing (PP) | Plaster |
| Laminated | Laminated object manufacturing (LOM) | Paper, metal foil, plastic film |
| Light polymerised | Stereo lithography(SLA) | photopolymer |
| | Digital Light Processing (DLP) | photopolymer |

Extrusion deposition

Fused deposition modeling (FDM) was developed by S. Scott Crump in the late 1980s and was commercialized in 1990 by Stratasys.After the patent on this technology expired, a large open-source development community developed and both commercial and DIY variants utilizing this type of 3D printer appeared. As a result, the price of this technology has dropped by two orders of magnitude since its creation.

In fused deposition modeling the model or part is produced by extruding small beads of material which harden immediately to form layers. Athermoplastic filament or metal wire that is wound on a coil is unreeled to supply material to an extrusion nozzle head. The nozzle head heats the material and turns the flow on and off. Typically stepper motors or servo motors are employed to move the extrusion head and adjust the flow. The head can be moved in both horizontal and vertical directions, and control of the mechanism is typically done by a computer-aided manufacturing (CAM) software package running on a microcontroller.

Various polymers are used, including acrylonitrile butadiene styrene (ABS), polycarbonate (PC), polylactic acid (PLA), high density polyethylene (HDPE), PC/ABS, polyphenylsulfone (PPSU) and high impact polystyrene (HIPS). In general, the polymer is in the form of a filament fabricated from virgin resins. There are multiple projects in the open-sourced community aimed at processing post-consumer plastic waste into filament. These involve machines used to shred and extrude the plastic material into filament.

FDM is somewhat restricted in the variation of shapes that may be fabricated. For example, FDM usually cannot produce stalactite-like structures, since they would be unsupported during the build. Otherwise, a thin support must designed into the structure which can be broken away during finishing.

Granular materials binding

Another 3D printing approach is the selective fusing of materials in a granular bed. The technique fuses parts of the layer and then moves downward in the working area, adding another layer of granules and repeating the process until the piece has built up. This process uses the un fused media to support overhangs and thin walls in the part being produced, which reduces the need for temporary auxiliary supports for the piece. A laser is typically used to sinter the media into a solid. Examples include selective laser sintering (SLS), with both metals and polymers(e.g. PA, PA-GF, Rigid GF, PEEK, PS, Alumide, Carbonmide, elastomers), and direct metal laser sintering (DMLS).

Selective Laser Sintering (SLS) was developed and patented by Dr. Carl Deckard and Dr. Joseph Beaman at the University of Texas at Austin in the mid-1980s, under sponsorship of DARPA. A similar process was patented without being commercialized by R. F. Housholder in 1979.

Selective Laser Melting (SLM) does not use sintering for the fusion of powder granules but will completely melt the powder using a high-energy laser to create fully dense materials in a layer- wise method that has mechanical properties similar to those of conventional manufactured metals.

Electron beam melting (EBM) is a similar type of additive manufacturing technology for metal parts (e.g. titanium alloys). EBM manufactures parts by melting metal powder layer by layer with an electron beam in a high vacuum. Unlike metal sintering techniques that operate below melting point, EBM parts are fully dense, void-free, and very strong.

Another method consists of an inkjet 3D printing system. The printer creates the model one layerat a time by spreading a layer of powder (plaster, or resins) and printing a binder in the cross- section of the part using an inkjet-like process. This is repeated until every layer has been printed. This technology allows the printing of full color prototypes, overhangs, and elastomer parts. The strength of bonded powder prints can be enhanced with wax or thermoset polymer impregnation.

Lamination

In some printers, paper can be used as the build material, resulting in a lower cost to print. During the 1990s some companies marketed printers that cut cross sections out of special adhesive coated paper using a carbon dioxide laser and then laminated them together.

In 2005, Mcor Technologies Ltd developed a different process using ordinary sheets of office paper, a Tungsten carbide blade to cut the shape, and selective deposition of adhesive and pressure to bond the prototype.^[36]

There are also a number of companies selling printers that print laminated objects using thin plastic and metal sheets

Photo polymerization

Stereo lithography was patented in 1986 by Chuck Hull. Photo polymerization is primarily used in stereo lithography (SLA) to produce a solid part from a liquid. This process dramatically redefined previous efforts, from the "photosculpture" method of François Willème (1830–1905) in 1860 through the photopolymerization of Mitsubishi's Matsubara in 1974. The "photosculpture" method consisted of photographing a subject from a variety of equidistant angles and projecting each photograph onto a screen, where a pantagraph was used to trace the outline onto modeling clay)

In photo-polymerization, a vat of liquid polymer is exposed to controlled lighting under safelight conditions. The exposed liquid polymer hardens. The build plate then moves down in small increments and the liquid polymer is again exposed to light. The process repeats until the model has been built. The liquid polymer is then drained from the vat, leaving the solid model. The EnvisionTEC Perfactory is an example of a DLP rapid prototyping system.

Inkjet printer systems like the Objet PolyJet system spray photopolymer materials onto a build tray in ultra-thin layers (between 16 and 30 μ m) until the part is completed. Each photopolymer layer is cured with UV light after it is jetted, producing fully cured models that can be handled and used immediately, without post-curing. The gel-like support material, which is designed to support complicated geometries, is removed by hand and water jetting. It is also suitable for elastomers.

Ultra-small features can be made with the 3D micro-fabrication technique usedin multiphoton photopolymerisation. This approach uses a focused laser to trace the desired 3D object into a block of gel. Due to the nonlinear nature of photo excitation, the gel is cured to a solid only in the places where the laser was focused while the remaining gel is then washed away. Feature sizes of under 100 nm are easily produced, as well as complex structures with moving and interlocked parts.

Yet another approach uses a synthetic resin that is solidified using LEDs.

Mask-image-projection-based stereolithography

In this technique a 3D digital model is sliced by a set of horizontal planes. Each slice is converted into a two-dimensional mask image. The mask image is then projected onto a photocurable liquid resin surface and light is projected onto the resin to cure it in the shape of the layer. The technique has been used to create objects composed of multiple materials that cure at different rates. In research systems, the light is projected from below, allowing the resin to be quickly spread into uniform thin layers, reducing production time from hours to minutes. Commercially available devices such as Objet Connex apply the resin via small nozzles.

Bio printing

The medical applications of 3D bioprinting are numerous, and are thus the subject of intensive research at academic institutions such as Cornell University and companies such as Organovo.

Researchers in the Jonathan Butcher Laboratory at Cornell University have been developing methods to bioprint living aortic heart valves.Poly(ethylene glycol)-diacrylate (PEGDA) is used as a base polymer, because of its biocompatibility and easily tunable mechanical properties. Two different solutions of PEGDA were created with different mechanical stiffness's when cross- linked, with the stiffer polymer to be used as the aortic root wall and the compliant polymer to beused as the valve leaflets. Using these solutions, a valve exhibiting mechanical heterogeneity andcytocompatibility was bio printed, which will serve as a base for future development of the aorticvalve printing process.

The Lawrence Bonassar Laboratory at Cornell University has been working on 3D bio printing cartilaginous geometries. One focus of their research involves the replacement of intervertebral disks with Tissue Engineered-Total Disk Replacement constructs. Tissue engineered intervertebral disks were bio printed with cell-seeded hydrogel constructs, and implanted into male rats.

Commercially, Printerinks, a UK company, and Organovo, a U.S. company, have worked together to develop human tissue through 3D printing. Printer cartridges are adapted to usestem cells obtained from biopsies and grown in cultures. The resulting substance is called Bioink.

6. Advantage Of 3d Printing

Cheap Manufacturing

As discussed in the first post of this series, 3D printing is increasingly being used by large companies such as Converse or Alessi to replace some of their traditional manufacturing methods with cost savings of up to 70%. This is achieved through lower shipping and packaging costs related to overseas parts suppliers, less human resource involved and cheaper and sometimes more reliable raw materials.

Although currently 3D home-printed objects are not necessarily cheaper than their massmanufactured counter parts, printing your own object a priceless experience for many (at least until its novelty wears off). 3D printed objects are only expected to get cheaper with improved additive manufacturing techniques, cheaper consumables, main stream adoption and self- replicating practices.

Quick Production

The speed of 3D printing compared to traditional methods is similar to comparing a sports car's top speed to a horse cart's. They both take you where you want to go but the journey time differs considerably. With industrial 3D printers being able to 'manufacture' most objects in a matter of hours, the classical manufacturing methods, taking up to several days or even weeks (from prototype to end product), are slowly becoming obsolete.

This leads to massive cost savings and to an on-demand manufacturing model. Why should you have warehouses filled up with stocks of your products if you can create them according to demand? Even if this model might not work with the big offline manufacturers due to their dependence on offline retailers that usually buy in bulk, it can prove extremely efficient for an online business.

Less waste

Manufacturing metal and plastic objects in particular is usually a wasteful process with chunky parts and a lot of surplus material. For some aircraft makers, up to 90% of the material is being cut away and no longer useful. Making a similar object using additive manufacturing not only uses less energy but also reduces waste to a minimum. And sometimes, the finished 3D printed product can be up to 60% lighter compared to the machined part but still as sturdy according to the Economist. Significant cost savings can be achieved in this way and less waste also means a lower impact on the environment.

Better quality

Think about 3D printing ascake baking. You can make a cake by whisking some cake mix, pouring it in an oven tray and baking everything. The result may taste amazing but it can have unwanted air bubbles inside, different thickness and all nuts or fruits could be grouped to one side. However, if you could assemble the cake layer by layer similar to additive manufacturing, you could achieve perfection through a full control of where each layer is going and how it fits with the rest.

Avoiding most of the mass manufacturing faults does not only make better products but it also extends their life as they will break less often. This is not necessarily a great benefit formanufacturers who need the product life cycle to be profitable, but it is certainly a major benefit for the end consumer.

Accessibility

With more people getting access to 3D printing, it may not be long until we will all have our own multi-purpose contraption (with additive manufacturing being only one of the many functionalities) capable of creating the products we need, when we need them. This can seriouslyshake up the current consumerism culture built on the contemporary industrial supply chain nevertheless, it remains to be seen if this is only an ideology or a possible transitional period in human evolution.

Less waste compared to traditional manufacturing methods is not only a cost saving feature of 3D printing but also a possible eco-friendly attribute. Add to this the multi-purpose characteristicof a 3D printer (can build different objects without the need of using specialised machines for each part) and their digital ecosystem (all 3D models are transmitted electronically so in theory they can be printed out where they are needed, minimising therefore transport costs) and you get a sustainable manufacturing process. Integrating additive manufacturing with more classic production methods – as is the case with 3D printed textiles in the clothing industry – adds another layer (excuse the pun) to the sustainability case.

New shapes and structures

Traditional manufacturing methods rely on moulds and cutting technologies to produce a finite number of shapes and structures, with more complex hollow ones having to be created from several parts and assembled together. But 3D printing changes this altogether – the 3D printer's nozzle can build an infinite number of complex figures, being limited only by human imagination. This method gives them more durability and higher structural integrity. From medical implants that resemble bone to aerodynamic parts for the space industry and from unique-shaped furniture to 3D printed jewellery, the opportunities are endless.

New combinations of materials

Mixing different raw materials is not always possible with mass-manufacturing methods due to the sometimes high costs involved and to their physical & chemical properties that make them difficult to combine through traditional methods. 3D printing has removed many of these boundaries not only because of the initial dependency on plastic (being one of the few raw

materials that melt at lower temperatures) but also because of a continuous innovation fed by enthusiasts believing that additive manufacturing's potential has not been reached yet. As a result, many companies now offer tens of different materials with different finishes giving the look and feel of metal, ceramics or glass with various strengths and temperature resistance.

New business models

With 3D printing gaining popularity fast, entrepreneurs have not lost any opportunity to get their foot into an industry deemed by many as potentially very lucrative. This is how 3D printing 'shops' were born. Imagine going shopping in a supermarket where you decide how your products will look and feel, and where everything can be personalised to fit your demanding tastes.

7 Disadvantage Of 3d Printing

Fewer Manufacturing Jobs:

As with all new technologies, manufacturing jobs will decrease. This disadvantage can and will have a large impact to the economies of third world countries, especially China, that depend on a large number of low skill jobs.

Limited Materials:

Currently, 3D printers only manufacture products out of plastic, resin, certain metals, and ceramics. 3D printing of products in mixed materials and technology, such as circuit boards, are still under development.

Copyright:

With 3D printing becoming more common, the printing of copyrighted products to create counterfeit items will become more common and nearly impossible to determine.

Dangerous Items:

3D printers can create dangerous items, such as guns and knives, with very little or no oversight.

More Useless Stuff:

One of the dangers of 3D printers is that they will be used to create more useless stuff that is bad for the environment and wallets. Fortunately, there are new methods of automatically recycling objects made by 3D printers that hold promise of better recycling in the future.

Size:

Currently, 3D printers are limited with the size of the products that they can create. Ultimately, large items, such as houses and building, could be created using 3D printers.

8. Application

Medical :- A New Way to Heal Broken Bones

In the near future, having a broken arm could look way cooler thanks to a new, black, lightweight 3-D printed cast that's patterned like latticework and which uses an ultrasound device to make bones heal more quickly.







a new way to heal broken bones by 3d printing

.3d printed wound hill process



Scanning the wound



Filling the wound

3.Jewellery





different type of rings and jewellery

8.4. footwear





different type of footwear made by 3d printing

8.5.3d printed car

Urbee II, a 3D-printed electric car about to go into production, boasts an ultrastrong, ultralight chassis that can take on highway rigors with ease.



Urbee II 3D printed car

8.6. bulding construction:

Building printing refers to various technology that use 3D printing as a way to construct buildings. The advantages of this would be quicker construction, lower labor costs, and less waste produced. It is also a potential way of building extraterrestrial structures on the Moon or other planets where environmental conditions are less conducive to human labor-intensive building practices.



3d printed home

8.7.Toys



Different type of toyes

8.8.Food



Different type of food

Mobile covers



different type of mobile covers

Guns



Gun made by 3d printing

8.11. human organs:-



different type of human organs using 3d printing

Conclusion

3D printing can offer benefits across the entire creation process from initial concept design to final manufacturing and all steps in between. Different applications have unique needs and understanding those application requirements is critical when choosing a 3D printer. Multiple systems may offer broader use opportunities than a single system, so identifying your unique requirements to apply 3D printing across your entire design-to-manufacture process can shorten time-to-market, improve product performance, streamline and cost-reduce manufacturing, and improve product quality and customer satisfaction will help you define the ideal 3D printing capability for your organization.

SUMMER TRAINING REPORT ON

3D PRINTING

At

INTERNSHALA Submitted In the partial fulfillment of **Bachelor of Engineering**



Department of **Production and Industrial Engineering** 2021-2022

Submitted by: NIRMA PRAJAPAT

Roll number: 19UPIE1325

6th semester (3rd year)

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A formal statement of acknowledgement is hardly sufficient to express my gratitude towards the personalities who have helped me in training. First and foremost I take this opportunity to express my sincere gratitude & sincere thanks Mr. Tayseer Almattar, Trainer (3D Printing) at Internshala. We are very thankful to Internshala brining out all success as we take our first step into the new world of technology. I hereby convey my thanks to Dr. Milind Kumar Sharma, Head of Department of Production and Industrial Engineering and all the faculty members of Production and Industrial Engineering Department for their valuable help and constant cooperation. I also want to thanks to my parents for providing me financial assistance and moral support rendered by my parents in making this effort a success. All this has become a reality because of their blessings.

NAME:-NIRMA PRAJAPAT ROLL NO. :- 19UPIE1325 6th semester (*3*rd year)

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A 3D printer uses a virtual, mathematical model to construct a physical artifact. For example, a designer in the process of creating a new laptop can use a software package to create a threedimensional model of her creation, that can be manipulated and viewed on the computer screen. The 3D printer can take the symbolic representation of this new object and use it to build a full-size, physical model that can be held and manipulated, helping the designer to better understand the strengths and limitations of her design.

An architect can turn the plans for a building into a three-dimensional model and then "print" a scale model to help him understand and communicate his design. An archaeologist can print duplicates of an important, but fragile, tool so that her students can hold it in their hands and better understand how it might have been used by an ancient civilization. A biochemist can print accurate models of DNA molecules, enlarged by many orders of magnitude, to helpstudents and researchers better understand nature by engaging their hands as well as their eyes in comprehending the geometry of nature. And a student of the arts can create a unique object that would be difficult or impossible to build by hand.

We will not here consider other types of computer-controlled manufacturing, such subtractive machines, which work by cutting away from a larger piece of material in order to build a part. Additive rapid prototyping machines were first introduced twenty years ago, when 3D Systems introduced the Stereo lithography, or SLA machine. While these machines were remarkable for their ability to create complex parts, they were large, expense, and difficult to operate.

1. History Of 3d Printing

Early AM equipment and materials were developed in the 1980s.In 1984, Chuck Hull of 3D Systems Corporation, invented a process known as stereo lithography, in which layers are added by curing photopolymers with UV lasers. Hull defined the process as a "system for generating three-dimensional objects by creating a cross-sectional pattern of the object to be formed. He also developed the STL (Stereo Lithography) file format widely accepted by 3D printing software as well as the digital slicing and infill strategies common to many processes today. The term *3D printing* originally referred to a process employing standard and custom inkjet print heads. The technology used by most 3D printers to date—especially hobbyist and consumer- oriented models—is fused deposition modeling, a special application of plastic extrusion.



Chuck Hull the father of 3D printing

AM processes for metal sintering or melting usually went by their own individual names in the 1980s and 1990s. Nearly all metalworking production the wasby casting, at time fabrication, stamping, and machining; even though plenty of automation was applied to those technologies (such as by robot welding and CNC), the idea of a tool or head moving through a 3D work envelope transforming a mass of raw material into a desired shape layer by layer was associated by most people only with processes that removed metal (rather than adding it), such as CNC milling, CNC EDM, and many others. The umbrella term additive manufacturing gained wider currency in the decade of the 2000.as the various additive processes

matured and it became clear that soon metal removal would no longer be the sole occupant of the aforementioned paradigm. It was during this decade that the term subtractive manufacturing appeared for the large family of machining processes with metal removal as their common theme. However, at the time, the term 3D printing still referred only to the polymer technologies in most minds, and the term AM was likelier to be used in metalworking contexts than among polymer/inkjet/stereo lithography enthusiasts.

By the early 2010s, the terms 3D printing and additive manufacturing developed senses in which they were synonymous umbrella terms for all AM technologies. Although this was a departure from their earlier technically narrower senses, it reflects the simple fact that the technologies all share the common theme of sequential-layer material addition/joining throughout a 3D work envelope under automated control. (Other terms that have appeared, which are usually used as AM synonyms have beendesktop manufacturing, rapid manufacturing [as the logical production- level successor to rapid prototyping], and on-demand manufacturing [which echoes on-demand printing in the 2D sense of printing].) The 2010s were the first decade in which metal parts such as engine brackets and large nutswould be grown (either before or instead of machining) in job production rather than obligatory being machined from bar stock or plate. The term subtractive has not replaced the term machining, instead complementing it when a term thatcovers any removal method is needed.
2. General Principles

2.1 Modeling

3D printable models may be created with a computer aided design package or via 3D scanner. The manual modeling process of preparing geometric data for 3D computer graphics is similar toplastic arts such as sculpting. 3D scanning is a process of analyzing and collecting digital data on the shape and appearance of a real object. Based on this data, three-dimensional models of the scanned object can then be produced.

Both manual and automatic creation of 3D printable models is difficult for average consumers. This is why several marketplaces have emerged over the last years. Among the most popular are Shape ways, Thing verse, MyMiniFactory and Threading

Printing

Before printing a 3D model from an STL file, it must first be processed by a piece of software called a "slicer" which converts the model into a series of thin layers and produces a G-code file containing instructions tailored to a specific printer. Several open source slicer programs exist, including Skeinforge, Slic3r, KISSlicer, and Cura.

The 3D printer follows the G-code instructions to lay down successive layers of liquid, powder, paper or sheet material to build the model from a series of cross sections. These layers, which correspond to the virtual cross sections from the CAD model, are joined or automatically fused to create the final shape. The primary advantage of this technique is its ability to create almost any shape or geometric feature.

Printer resolution describes layer thickness and X-Y resolution in dots per inch (dpi) or micrometers (μ m). Typical layer thickness is around 100 μ m (250 DPI), although some machines such as the Objet Convex series and 3D Systems' ProJet series can print layers as thin as 16 μ m (1,600 DPI). X-Y resolution is comparable to that of laser printers. The particles (3D dots) are around 50 to 100 μ m (510 to 250 DPI) in diameter.

Construction of a model with contemporary methods can take anywhere from several hours to several days, depending on the method used and the size and complexity of the model. Additive systems can typically reduce this time to a few hours, although it varies widely depending on the type of machine used and the size and number of models being produced simultaneously.

Traditional techniques like injection moldings can be less expensive for manufacturing polymer products in high quantities, but additive manufacturing can be faster, more flexible and less expensive when producing relatively small quantities of parts. 3D printers give designers and concept development teams the ability to produce parts and concept models using a desktop size printer.

Finishing

Though the printer-produced resolution is sufficient for many applications, printing a slightly oversized version of the desired object in standard resolution and then removing materialwith a higher-resolution subtractive process can achieve greater precision. As with the LUMEX Avance-25 and other machines slated for IMTS 2014 IMTS Press Release | International Manufacturing Technology Show

Some additive manufacturing techniques are capable of using multiple materials in the course of constructing parts. Some are able to print in multiple colors and color combinations simultaneously. Some also utilise supports when building. Supports are removable or dissolvableupon completion of the print, and are used to support overhanging features during construction.

3. Current 3d Printing Technologies

Stereo lithography

Stereo lithographic 3D printers (known as SLAs or stereo lithography apparatus) position a perforated platform just below the surface of a vat of liquid photo curable polymer. A UV laser beam then traces the first slice of an object on the surface of this liquid, causing a very thin layer of photopolymer to harden. The perforated platform is then lowered very slightly and another slice is traced out and hardened by the laser. Another slice is then created, and then another, untila complete object has been printed and can be removed from the vat of photopolymer, drained ofexcess liquid, and cured. Fused deposition modeling - Here a hot thermoplastic is extruded from temperature-controlled print head to produce fairly robust objects to a high degree of accuracy.

Selective laser sintering (SLS)

This builds objects by using a laser to selectively fuse together successive layers of a cocktail of powdered wax, ceramic, metal, nylon or one of a range of other materials.

Multi-jet modeling (MJM)

This again builds up objects from successive layers of powder, with an inkjet-like print head used to spray on a binder solution that glues only the required granules together. The V-Flash printer, manufactured by Canon, is low-cost 3D printer. It's known to build layers with a light- curable film. Unlike other printers, the VFlash builds its parts from the top down.Desktop Factory is a startup launched by the Idea lab incubator in Pasadena, California.

Inkjet 3D printing

It creates the model one layer at a time by spreading a layer of powder (plaster, or resins) and inkjet printing binder in the cross-section of the part. It is the most widely used 3-D Printing technology these days and the reasons beyond that are stated below.

This technology is the only one that

 \Box Allows for the printing of full color prototypes.

Unlike stereo lithography, inkjet 3D printing is optimized for speed, low cost, and ease-of-use.

4. There is two major type Manufacturing

Additive Manufacturing

 Creating A Form Conserves Resources Efficient 3D Printing



Additive manufacturing

Subtractive Manufacturing

Uncovering A Form

O Carving A Sculpture Chiseling A Statue

Wasteful

Time Consuming



Subtractive Manufacturing

5. Processes

Several different 3D printing processes have been invented since the late 1970s. The printers were originally large, expensive, and highly limited in what they could produce.

A large number of additive processes are now available. The main differences between processes in the way layers are deposited to create parts and in the materials that are used. Some methods melt or soften material to produce the layers, e.g. selective laser melting(SLM) or direct metal laser sintering (DMLS), selective laser sintering (SLS), fused deposition modeling (FDM), while others cure liquid materials using different sophisticated technologies, e.g. stereo lithography (SLA). With laminated object manufacturing (LOM), thin layers are cut to shape and joined together (e.g. paper, polymer, metal). Each method has its own advantages and drawbacks, which is why some companies consequently offer a choice between powder and polymer for the material used to build the object. Other companies sometimes use standard, off- the-shelf business paper as the build material to produce a durable prototype. The main considerations in choosing a machine are generally speed, cost of the 3D printer, cost of the printed prototype, cost and choice of materials, and color capabilities.

Printers that work directly with metals are expensive. In some cases, however, less expensive printers can be used to make a mould, which is then used to make metal parts.

| Туре | Technologies | Materials |
|-----------|--|--|
| Extrusion | Fused deposition modeling (FDM) | Thermoplastics (e.g. PLA, ABS), HDPE, eute ctic metals, edible materials, Rubber (Sugru),Modeling clay, Plasticine, RTV silicone, Porcelain, Metal clay (including Precious Metal Clay) |
| Wire | Electron Beam Freeform Fabrication(EBF) | Almost any metal alloy |
| Granular | Direct metal laser | Almost any metal alloy |

Table 1 materials and technologies

| | sintering (DMLS) | |
|--|---|--|
| | Electron-beam melting (EBM) | Almost any metal alloy including Titanium alloys |
| | Selective laser melting (SLM) | Titanium alloys, Cobalt Chrome alloys, Stainless Steel, Aluminium |
| | Selective heat sintering (SHS) | Thermoplastic powder |
| | Selective laser sintering (SLS) | Thermoplastics, metal powders, ceramic powders |
| Powder bed and inkjet head 3D printing | Plaster-based 3D printing (PP) | Plaster |
| Laminated | Laminated object manufacturing (LOM) | Paper, metal foil, plastic film |
| Light polymerised | Stereo lithography(SLA) | photopolymer |
| | Digital Light Processing (DLP) | photopolymer |

Extrusion deposition

Fused deposition modeling (FDM) was developed by S. Scott Crump in the late 1980s and was commercialized in 1990 by Stratasys.After the patent on this technology expired, a large open-source development community developed and both commercial and DIY variants utilizing this type of 3D printer appeared. As a result, the price of this technology has dropped by two orders of magnitude since its creation.

In fused deposition modeling the model or part is produced by extruding small beads of material which harden immediately to form layers. Athermoplastic filament or metal wire that is wound on a coil is unreeled to supply material to an extrusion nozzle head. The nozzle head heats the material and turns the flow on and off. Typically stepper motors or servo motors are employed tomove the extrusion head and adjust the flow. The head can be moved in both horizontal and vertical directions, and control of the mechanism is typically done by a computer-aided manufacturing (CAM) software package running on a microcontroller.

Various polymers are used, including acrylonitrile butadiene styrene (ABS), polycarbonate (PC), polylactic acid (PLA), high density polyethylene (HDPE), PC/ABS, polyphenylsulfone (PPSU) and high impact polystyrene (HIPS). In general, the polymer is in the form of a filament fabricated from virgin resins. There are multiple projects in the open-sourced community aimed at processing post-consumer plastic waste into filament. These involve machines used to shred and extrude the plastic material into filament.

FDM is somewhat restricted in the variation of shapes that may be fabricated. For example, FDM usually cannot produce stalactite-like structures, since they would be unsupported during the build. Otherwise, a thin support must designed into the structure which can be broken away during finishing.

Granular materials binding

Another 3D printing approach is the selective fusing of materials in a granular bed. The technique fuses parts of the layer and then moves downward in the working area, adding another layer of granules and repeating the process until the piece has built up. This process uses the un fused media to support overhangs and thin walls in the part being produced, which reduces the need for temporary auxiliary supports for the piece. A laser is typically used to sinter the media into a solid. Examples include selective laser sintering (SLS), with both metals and polymers(e.g. PA, PA-GF, Rigid GF, PEEK, PS, Alumide, Carbonmide, elastomers), and direct metal laser sintering (DMLS).

Selective Laser Sintering (SLS) was developed and patented by Dr. Carl Deckard and Dr. Joseph Beaman at the University of Texas at Austin in the mid-1980s, under sponsorship of DARPA. A similar process was patented without being commercialized by R. F. Housholder in 1979.

Selective Laser Melting (SLM) does not use sintering for the fusion of powder granules but will completely melt the powder using a high-energy laser to create fully dense materials in a layer- wise method that has mechanical properties similar to those of conventional manufactured metals.

Electron beam melting (EBM) is a similar type of additive manufacturing technology for metal parts (e.g. titanium alloys). EBM manufactures parts by melting metal powder layer by layer with an electron beam in a high vacuum. Unlike metal sintering techniques that operate below melting point, EBM parts are fully dense, void-free, and very strong.

Another method consists of an inkjet 3D printing system. The printer creates the model one layerat a time by spreading a layer of powder (plaster, or resins) and printing a binder in the cross- section of the part using an inkjet-like process. This is repeated until every layer has been printed. This technology allows the printing of full color prototypes, overhangs, and elastomer parts. The strength of bonded powder prints can be enhanced with wax or thermoset polymer impregnation.

Lamination

In some printers, paper can be used as the build material, resulting in a lower cost to print. During the 1990s some companies marketed printers that cut cross sections out of special adhesive coated paper using a carbon dioxide laser and then laminated them together.

In 2005, Mcor Technologies Ltd developed a different process using ordinary sheets of office paper, a Tungsten carbide blade to cut the shape, and selective deposition of adhesive and pressure to bond the prototype.^[36]

There are also a number of companies selling printers that print laminated objects using thin plastic and metal sheets

Photo polymerization

Stereo lithography was patented in 1986 by Chuck Hull. Photo polymerization is primarily used in stereo lithography (SLA) to produce a solid part from a liquid. This process dramatically redefined previous efforts, from the "photosculpture" method of François Willème (1830–1905) in 1860 through the photopolymerization of Mitsubishi's Matsubara in 1974. The "photosculpture" method consisted of photographing a subject from a variety of equidistant angles and projecting each photograph onto a screen, where a pantagraph was used to trace the outline onto modeling clay)

In photo-polymerization, a vat of liquid polymer is exposed to controlled lighting under safelight conditions. The exposed liquid polymer hardens. The build plate then moves down in small increments and the liquid polymer is again exposed to light. The process repeats until the model has been built. The liquid polymer is then drained from the vat, leaving the solid model. The EnvisionTEC Perfactory is an example of a DLP rapid prototyping system.

Inkjet printer systems like the Objet PolyJet system spray photopolymer materials onto a build tray in ultra-thin layers (between 16 and 30 μ m) until the part is completed. Each photopolymer layer is cured with UV light after it is jetted, producing fully cured models that can be handled and used immediately, without post-curing. The gel-like support material, which is designed to support complicated geometries, is removed by hand and water jetting. It is also suitable for elastomers.

Ultra-small features can be made with the 3D micro-fabrication technique usedin multiphoton photopolymerisation. This approach uses a focused laser to trace the desired 3D object into a block of gel. Due to the nonlinear nature of photo excitation, the gel is cured to a solid only in the places where the laser was focused while the remaining gel is then washed away. Feature sizes of under 100 nm are easily produced, as well as complex structures with moving and interlocked parts.

Yet another approach uses a synthetic resin that is solidified using LEDs.

Mask-image-projection-based stereolithography

In this technique a 3D digital model is sliced by a set of horizontal planes. Each slice is converted into a two-dimensional mask image. The mask image is then projected onto a photocurable liquid resin surface and light is projected onto the resin to cure it in the shape of thelayer. The technique has been used to create objects composed of multiple materials that cure at different rates. In research systems, the light is projected from below, allowing the resin to be quickly spread into uniform thin layers, reducing production time from hours to minutes. Commercially available devices such as Objet Connex apply the resin via small nozzles.

Bio printing

The medical applications of 3D bioprinting are numerous, and are thus the subject of intensive research at academic institutions such as Cornell University and companies such as Organovo.

Researchers in the Jonathan Butcher Laboratory at Cornell University have been developing methods to bioprint living aortic heart valves.Poly(ethylene glycol)-diacrylate (PEGDA) is used as a base polymer, because of its biocompatibility and easily tunable mechanical properties. Two different solutions of PEGDA were created with different mechanical stiffness's when cross- linked, with the stiffer polymer to be used as the aortic root wall and the compliant polymer to beused as the valve leaflets. Using these solutions, a valve exhibiting mechanical heterogeneity andcytocompatibility was bio printed, which will serve as a base for future development of the aorticvalve printing process.

The Lawrence Bonassar Laboratory at Cornell University has been working on 3D bio printing cartilaginous geometries. One focus of their research involves the replacement of intervertebral disks with Tissue Engineered-Total Disk Replacement constructs. Tissue engineered intervertebral disks were bio printed with cell-seeded hydrogel constructs, and implanted into male rats.

Commercially, Printerinks, a UK company, and Organovo, a U.S. company, have worked together to develop human tissue through 3D printing. Printer cartridges are adapted to usestem cells obtained from biopsies and grown in cultures. The resulting substance is called Bioink.

6. Advantage Of 3d Printing

Cheap Manufacturing

As discussed in the first post of this series, 3D printing is increasingly being used by large companies such as Converse or Alessi to replace some of their traditional manufacturing methods with cost savings of up to 70%. This is achieved through lower shipping and packaging costs related to overseas parts suppliers, less human resource involved and cheaper and sometimes more reliable raw materials.

Although currently 3D home-printed objects are not necessarily cheaper than their massmanufactured counter parts, printing your own object a priceless experience for many (at least until its novelty wears off). 3D printed objects are only expected to get cheaper with improved additive manufacturing techniques, cheaper consumables, main stream adoption and self- replicating practices.

Quick Production

The speed of 3D printing compared to traditional methods is similar to comparing a sports car's top speed to a horse cart's. They both take you where you want to go but the journey time differs considerably. With industrial 3D printers being able to 'manufacture' most objects in a matter of hours, the classical manufacturing methods, taking up to several days or even weeks (from prototype to end product), are slowly becoming obsolete.

This leads to massive cost savings and to an on-demand manufacturing model. Why should you have warehouses filled up with stocks of your products if you can create them according to demand? Even if this model might not work with the big offline manufacturers due to their dependence on offline retailers that usually buy in bulk, it can prove extremely efficient for an online business.

Less waste

Manufacturing metal and plastic objects in particular is usually a wasteful process with chunky parts and a lot of surplus material. For some aircraft makers, up to 90% of the material is being cut away and no longer useful. Making a similar object using additive manufacturing not only uses less energy but also reduces waste to a minimum. And sometimes, the finished 3D printed product can be up to 60% lighter compared to the machined part but still as sturdy according to the Economist. Significant cost savings can be achieved in this way and less waste also means a lower impact on the environment.

Better quality

Think about 3D printing ascake baking. You can make a cake by whisking some cake mix, pouring it in an oven tray and baking everything. The result may taste amazing but it can have unwanted air bubbles inside, different thickness and all nuts or fruits could be grouped to one side. However, if you could assemble the cake layer by layer similar to additive manufacturing, you could achieve perfection through a full control of where each layer is going and how it fits with the rest.

Avoiding most of the mass manufacturing faults does not only make better products but it also extends their life as they will break less often. This is not necessarily a great benefit formanufacturers who need the product life cycle to be profitable, but it is certainly a major benefit for the end consumer.

Accessibility

With more people getting access to 3D printing, it may not be long until we will all have our own multi-purpose contraption (with additive manufacturing being only one of the many functionalities) capable of creating the products we need, when we need them. This can seriouslyshake up the current consumerism culture built on the contemporary industrial supply chain nevertheless, it remains to be seen if this is only an ideology or a possible transitional period in human evolution.

Less waste compared to traditional manufacturing methods is not only a cost saving feature of 3D printing but also a possible eco-friendly attribute. Add to this the multi-purpose characteristicof a 3D printer (can build different objects without the need of using specialised machines for each part) and their digital ecosystem (all 3D models are transmitted electronically so in theory they can be printed out where they are needed, minimising therefore transport costs) and you get a sustainable manufacturing process. Integrating additive manufacturing with more classic production methods – as is the case with 3D printed textiles in the clothing industry – adds another layer (excuse the pun) to the sustainability case.

New shapes and structures

Traditional manufacturing methods rely on moulds and cutting technologies to produce a finite number of shapes and structures, with more complex hollow ones having to be created from several parts and assembled together. But 3D printing changes this altogether – the 3D printer's nozzle can build an infinite number of complex figures, being limited only by human imagination. This method gives them more durability and higher structural integrity. From medical implants that resemble bone to aerodynamic parts for the space industry and from unique-shaped furniture to 3D printed jewellery, the opportunities are endless.

New combinations of materials

Mixing different raw materials is not always possible with mass-manufacturing methods due to the sometimes high costs involved and to their physical & chemical properties that make them difficult to combine through traditional methods. 3D printing has removed many of these boundaries not only because of the initial dependency on plastic (being one of the few raw

materials that melt at lower temperatures) but also because of a continuous innovation fed by enthusiasts believing that additive manufacturing's potential has not been reached yet. As aresult, many companies now offer tens of different materials with different finishes giving the look and feel of metal, ceramics or glass with various strengths and temperature resistance.

New business models

With 3D printing gaining popularity fast, entrepreneurs have not lost any opportunity to get their foot into an industry deemed by many as potentially very lucrative. This is how 3D printing 'shops' were born. Imagine going shopping in a supermarket where you decide how your products will look and feel, and where everything can be personalised to fit your demanding tastes.

7 Disadvantage Of 3d Printing

Fewer Manufacturing Jobs:

As with all new technologies, manufacturing jobs will decrease. This disadvantage can and will have a large impact to the economies of third world countries, especially China, that depend on a large number of low skill jobs.

Limited Materials:

Currently, 3D printers only manufacture products out of plastic, resin, certain metals, and ceramics. 3D printing of products in mixed materials and technology, such as circuit boards, are still under development.

Copyright:

With 3D printing becoming more common, the printing of copyrighted products to create counterfeit items will become more common and nearly impossible to determine.

Dangerous Items:

3D printers can create dangerous items, such as guns and knives, with very little or no oversight.

More Useless Stuff:

One of the dangers of 3D printers is that they will be used to create more useless stuff that is bad for the environment and wallets. Fortunately, there are new methods of automatically recycling objects made by 3D printers that hold promise of better recycling in the future.

Size:

Currently, 3D printers are limited with the size of the products that they can create. Ultimately, large items, such as houses and building, could be created using 3D printers.

8. Application

Medical :- A New Way to Heal Broken Bones

In the near future, having a broken arm could look way cooler thanks to a new, black, lightweight 3-D printed cast that's patterned like latticework and which uses an ultrasound device to make bones heal more quickly.







a new way to heal broken bones by 3d printing

.3d printed wound hill process



Scanning the wound



Filling the wound





different type of rings and jewellery

3.Jewellery

8.4. footwear





different type of footwear made by 3d printing

8.5 .3d printed car

Urbee II, a 3D-printed electric car about to go into production, boasts an ultrastrong, ultralight chassis that can take on highway rigors with ease.



Urbee II 3D printed car

8.6. bulding construction:

Building printing refers to various technology that use 3D printing as a way to construct buildings. The advantages of this would be quicker construction, lower labor costs, and less waste produced. It is also a potential way of building extraterrestrial structures on the Moon or other planets where environmental conditions are less conducive to human labor-intensive building practices.



3d printed home

8.7. Toys



Different type of toyes

8.8. Food



Different type of food

Mobile covers



different type of mobile covers

Guns



Gun made by 3d printing

8.11. human organs:-



different type of human organs using 3d printing

Conclusion

3D printing can offer benefits across the entire creation process from initial concept design to final manufacturing and all steps in between. Different applications have unique needs and understanding those application requirements is critical when choosing a 3D printer. Multiple systems may offer broader use opportunities than a single system, so identifying your unique requirements to apply 3D printing across your entire design-to-manufacture process can shorten time-to-market, improve product performance, streamline and cost-reduce manufacturing, and improve product quality and customer satisfaction will help you define the ideal 3D printing capability for your organization.

SUMMER TRAINING REPORT ON

3D PRINTING

At

INTERNSHALA Submitted In the partial fulfillment of **Bachelor of Engineering**



Department of **Production and Industrial Engineering** 2021-2022

Submitted by: SIDDHI NAGAR

Roll number: 19UPIE1328

6th semester (3rd year)

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NAME:-SIDDHI NAGAR ROLL NO. :- 19UPIE1328 6th semester (3rd year)

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Chuck Hull the father of 3D printing

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2.1 Modeling

3D printable models may be created with a computer aided design package or via 3D scanner. The manual modeling process of preparing geometric data for 3D computer graphics is similar toplastic arts such as sculpting. 3D scanning is a process of analyzing and collecting digital data on the shape and appearance of a real object. Based on this data, three-dimensional models of the scanned object can then be produced.

Both manual and automatic creation of 3D printable models is difficult for average consumers. This is why several marketplaces have emerged over the last years. Among the most popular are Shape ways, Thing verse, MyMiniFactory and Threading

Printing

Before printing a 3D model from an STL file, it must first be processed by a piece of software called a "slicer" which converts the model into a series of thin layers and produces a G-code file containing instructions tailored to a specific printer. Several open source slicer programs exist, including Skeinforge, Slic3r, KISSlicer, and Cura.

The 3D printer follows the G-code instructions to lay down successive layers of liquid, powder, paper or sheet material to build the model from a series of cross sections. These layers, which correspond to the virtual cross sections from the CAD model, are joined or automatically fused to create the final shape. The primary advantage of this technique is its ability to create almost any shape or geometric feature.

Printer resolution describes layer thickness and X-Y resolution in dots per inch (dpi) or micrometers (μ m). Typical layer thickness is around 100 μ m (250 DPI), although some machines such as the Objet Convex series and 3D Systems' ProJet series can print layers as thin as 16 μ m (1,600 DPI). X-Y resolution is comparable to that of laser printers. The particles (3D dots) are around 50 to 100 μ m (510 to 250 DPI) in diameter.

Construction of a model with contemporary methods can take anywhere from several hours to several days, depending on the method used and the size and complexity of the model. Additive systems can typically reduce this time to a few hours, although it varies widely depending on the type of machine used and the size and number of models being produced simultaneously.

Traditional techniques like injection moldings can be less expensive for manufacturing polymer products in high quantities, but additive manufacturing can be faster, more flexible and less expensive when producing relatively small quantities of parts. 3D printers give designers and concept development teams the ability to produce parts and concept models using a desktop size printer.

Finishing

Though the printer-produced resolution is sufficient for many applications, printing a slightly oversized version of the desired object in standard resolution and then removing materialwith a higher-resolution subtractive process can achieve greater precision. As with the LUMEX Avance-25 and other machines slated for IMTS 2014 IMTS Press Release | International Manufacturing Technology Show

Some additive manufacturing techniques are capable of using multiple materials in the course of constructing parts. Some are able to print in multiple colors and color combinations simultaneously. Some also utilise supports when building. Supports are removable or dissolvableupon completion of the print, and are used to support overhanging features during construction.

3. Current 3d Printing Technologies

Stereo lithography

Stereo lithographic 3D printers (known as SLAs or stereo lithography apparatus) position a perforated platform just below the surface of a vat of liquid photo curable polymer. A UV laser beam then traces the first slice of an object on the surface of this liquid, causing a very thin layer of photopolymer to harden. The perforated platform is then lowered very slightly and another slice is traced out and hardened by the laser. Another slice is then created, and then another, untila complete object has been printed and can be removed from the vat of photopolymer, drained ofexcess liquid, and cured. Fused deposition modeling - Here a hot thermoplastic is extruded from temperature-controlled print head to produce fairly robust objects to a high degree of accuracy.

Selective laser sintering (SLS)

This builds objects by using a laser to selectively fuse together successive layers of a cocktail of powdered wax, ceramic, metal, nylon or one of a range of other materials.

Multi-jet modeling (MJM)

This again builds up objects from successive layers of powder, with an inkjet-like print head used to spray on a binder solution that glues only the required granules together. The V-Flash printer, manufactured by Canon, is low-cost 3D printer. It's known to build layers with a light- curable film. Unlike other printers, the VFlash builds its parts from the top down.Desktop Factory is a startup launched by the Idea lab incubator in Pasadena, California.

Inkjet 3D printing

It creates the model one layer at a time by spreading a layer of powder (plaster, or resins) and inkjet printing binder in the cross-section of the part. It is the most widely used 3-D Printing technology these days and the reasons beyond that are stated below.

This technology is the only one that

 \Box Allows for the printing of full color prototypes.

Unlike stereo lithography, inkjet 3D printing is optimized for speed, low cost, and ease-of-use.

4. There is two major type Manufacturing

Additive Manufacturing

 Creating A Form Conserves Resources Efficient 3D Printing



Additive manufacturing

Subtractive Manufacturing

Uncovering A Form O Carving A Sculpture

Chiseling A Statue

Wasteful

Time Consuming



Subtractive Manufacturing

5. Processes

Several different 3D printing processes have been invented since the late 1970s. The printers were originally large, expensive, and highly limited in what they could produce.

A large number of additive processes are now available. The main differences between processes in the way layers are deposited to create parts and in the materials that are used. Some methods melt or soften material to produce the layers, e.g. selective laser melting(SLM) or direct metal laser sintering (DMLS), selective laser sintering (SLS), fused deposition modeling (FDM), while others cure liquid materials using different sophisticated technologies, e.g. stereo lithography (SLA). With laminated object manufacturing (LOM), thin layers are cut to shape and joined together (e.g. paper, polymer, metal). Each method has its own advantages and drawbacks, which is why some companies consequently offer a choice between powder and polymer for the material used to build the object. Other companies sometimes use standard, off- the-shelf business paper as the build material to produce a durable prototype. The main considerations in choosing a machine are generally speed, cost of the 3D printer, cost of the printed prototype, cost and choice of materials, and color capabilities.

Printers that work directly with metals are expensive. In some cases, however, less expensive printers can be used to make a mould, which is then used to make metal parts.

| Туре | Technologies | Materials |
|-----------|--|--|
| Extrusion | Fused deposition modeling (FDM) | Thermoplastics (e.g. PLA, ABS), HDPE, eute ctic metals, edible materials, Rubber (Sugru),Modeling clay, Plasticine, RTV silicone, Porcelain, Metal clay (including Precious Metal Clay) |
| Wire | Electron Beam Freeform Fabrication(EBF) | Almost any metal alloy |
| Granular | Direct metal laser | Almost any metal alloy |

Table 1 materials and technologies

| | sintering (DMLS) | |
|--|---|--|
| | Electron-beam melting (EBM) | Almost any metal alloy including Titanium alloys |
| | Selective laser melting (SLM) | Titanium alloys, Cobalt Chrome alloys, Stainless Steel, Aluminium |
| | Selective heat sintering (SHS) | Thermoplastic powder |
| | Selective laser sintering (SLS) | Thermoplastics, metal powders, ceramic powders |
| Powder bed and inkjet head 3D printing | Plaster-based 3D printing (PP) | Plaster |
| Laminated | Laminated object manufacturing (LOM) | Paper, metal foil, plastic film |
| Light polymerised | Stereo lithography(SLA) | photopolymer |
| | Digital Light Processing (DLP) | photopolymer |

Extrusion deposition

Fused deposition modeling (FDM) was developed by S. Scott Crump in the late 1980s and was commercialized in 1990 by Stratasys. After the patent on this technology expired, a large open-source development community developed and both commercial and DIY variants utilizing this type of 3D printer appeared. As a result, the price of this technology has dropped by two orders of magnitude since its creation.

In fused deposition modeling the model or part is produced by extruding small beads of material which harden immediately to form layers. Athermoplastic filament or metal wire that is wound on a coil is unreeled to supply material to an extrusion nozzle head. The nozzle head heats the material and turns the flow on and off. Typically stepper motors or servo motors are employed tomove the extrusion head and adjust the flow. The head can be moved in both horizontal and vertical directions, and control of the mechanism is typically done by a computer-aided manufacturing (CAM) software package running on a microcontroller.

Various polymers are used, including acrylonitrile butadiene styrene (ABS), polycarbonate (PC), polylactic acid (PLA), high density polyethylene (HDPE), PC/ABS, polyphenylsulfone (PPSU) and high impact polystyrene (HIPS). In general, the polymer is in the form of a filament fabricated from virgin resins. There are multiple projects in the open-sourced community aimed at processing post-consumer plastic waste into filament. These involve machines used to shred and extrude the plastic material into filament.

FDM is somewhat restricted in the variation of shapes that may be fabricated. For example, FDM usually cannot produce stalactite-like structures, since they would be unsupported during the build. Otherwise, a thin support must designed into the structure which can be broken away during finishing.

Granular materials binding

Another 3D printing approach is the selective fusing of materials in a granular bed. The technique fuses parts of the layer and then moves downward in the working area, adding another layer of granules and repeating the process until the piece has built up. This process uses the un fused media to support overhangs and thin walls in the part being produced, which reduces the need for temporary auxiliary supports for the piece. A laser is typically used to sinter the media into a solid. Examples include selective laser sintering (SLS), with both metals and polymers(e.g. PA, PA-GF, Rigid GF, PEEK, PS, Alumide, Carbonmide, elastomers), and direct metal laser sintering (DMLS).

Selective Laser Sintering (SLS) was developed and patented by Dr. Carl Deckard and Dr. Joseph Beaman at the University of Texas at Austin in the mid-1980s, under sponsorship of DARPA. A similar process was patented without being commercialized by R. F. Housholder in 1979.

Selective Laser Melting (SLM) does not use sintering for the fusion of powder granules but will completely melt the powder using a high-energy laser to create fully dense materials in a layer- wise method that has mechanical properties similar to those of conventional manufacturedmetals.

Electron beam melting (EBM) is a similar type of additive manufacturing technology for metal parts (e.g. titanium alloys). EBM manufactures parts by melting metal powder layer by layer with an electron beam in a high vacuum. Unlike metal sintering techniques that operate below melting point, EBM parts are fully dense, void-free, and very strong.

Another method consists of an inkjet 3D printing system. The printer creates the model one layerat a time by spreading a layer of powder (plaster, or resins) and printing a binder in the cross- section of the part using an inkjet-like process. This is repeated until every layer has been printed. This technology allows the printing of full color prototypes, overhangs, and elastomer parts. The strength of bonded powder prints can be enhanced with wax or thermoset polymer impregnation.

Lamination

In some printers, paper can be used as the build material, resulting in a lower cost to print. During the 1990s some companies marketed printers that cut cross sections out of special adhesive coated paper using a carbon dioxide laser and then laminated them together.

In 2005, Mcor Technologies Ltd developed a different process using ordinary sheets of office paper, a Tungsten carbide blade to cut the shape, and selective deposition of adhesive and pressure to bond the prototype.^[36]

There are also a number of companies selling printers that print laminated objects using thin plastic and metal sheets

Photo polymerization

Stereo lithography was patented in 1986 by Chuck Hull. Photo polymerization is primarily used in stereo lithography (SLA) to produce a solid part from a liquid. This process dramatically redefined previous efforts, from the "photosculpture" method of François Willème (1830–1905) in 1860 through the photopolymerization of Mitsubishi's Matsubara in 1974. The "photosculpture" method consisted of photographing a subject from a variety of equidistant angles and projecting each photograph onto a screen, where a pantagraph was used to trace the outline onto modeling clay)

In photo-polymerization, a vat of liquid polymer is exposed to controlled lighting under safelight conditions. The exposed liquid polymer hardens. The build plate then moves down in small increments and the liquid polymer is again exposed to light. The process repeats until the model has been built. The liquid polymer is then drained from the vat, leaving the solid model. The EnvisionTEC Perfactory is an example of a DLP rapid prototyping system.

Inkjet printer systems like the Objet PolyJet system spray photopolymer materials onto a build tray in ultra-thin layers (between 16 and 30 μ m) until the part is completed. Each photopolymer layer is cured with UV light after it is jetted, producing fully cured models that can be handled and used immediately, without post-curing. The gel-like support material, which is designed to support complicated geometries, is removed by hand and water jetting. It is also suitable for elastomers.

Ultra-small features can be made with the 3D micro-fabrication technique usedin multiphoton photopolymerisation. This approach uses a focused laser to trace the desired 3D object into a block of gel. Due to the nonlinear nature of photo excitation, the gel is cured to a solid only in the places where the laser was focused while the remaining gel is then washed away. Feature sizes of under 100 nm are easily produced, as well as complex structures with moving and interlocked parts.

Yet another approach uses a synthetic resin that is solidified using LEDs.

Mask-image-projection-based stereolithography

In this technique a 3D digital model is sliced by a set of horizontal planes. Each slice is converted into a two-dimensional mask image. The mask image is then projected onto a photocurable liquid resin surface and light is projected onto the resin to cure it in the shape of thelayer. The technique has been used to create objects composed of multiple materials that cure at different rates. In research systems, the light is projected from below, allowing the resin to be quickly spread into uniform thin layers, reducing production time from hours to minutes. Commercially available devices such as Objet Connex apply the resin via small nozzles.

Bio printing

The medical applications of 3D bioprinting are numerous, and are thus the subject of intensive research at academic institutions such as Cornell University and companies such as Organovo.

Researchers in the Jonathan Butcher Laboratory at Cornell University have been developing methods to bioprint living aortic heart valves.Poly(ethylene glycol)-diacrylate (PEGDA) is used as a base polymer, because of its biocompatibility and easily tunable mechanical properties. Two different solutions of PEGDA were created with different mechanical stiffness's when cross- linked, with the stiffer polymer to be used as the aortic root wall and the compliant polymer to beused as the valve leaflets. Using these solutions, a valve exhibiting mechanical heterogeneity andcytocompatibility was bio printed, which will serve as a base for future development of the aorticvalve printing process.

The Lawrence Bonassar Laboratory at Cornell University has been working on 3D bio printing cartilaginous geometries. One focus of their research involves the replacement of intervertebral disks with Tissue Engineered-Total Disk Replacement constructs. Tissue engineered intervertebral disks were bio printed with cell-seeded hydrogel constructs, and implanted into male rats.

Commercially, Printerinks, a UK company, and Organovo, a U.S. company, have worked together to develop human tissue through 3D printing. Printer cartridges are adapted to usestem cells obtained from biopsies and grown in cultures. The resulting substance is called Bioink.

6. Advantage Of 3d Printing

Cheap Manufacturing

As discussed in the first post of this series, 3D printing is increasingly being used by large companies such as Converse or Alessi to replace some of their traditional manufacturing methods with cost savings of up to 70%. This is achieved through lower shipping and packaging costs related to overseas parts suppliers, less human resource involved and cheaper and sometimes more reliable raw materials.

Although currently 3D home-printed objects are not necessarily cheaper than their massmanufactured counter parts, printing your own object a priceless experience for many (at least until its novelty wears off). 3D printed objects are only expected to get cheaper with improved additive manufacturing techniques, cheaper consumables, main stream adoption and self- replicating practices.

Quick Production
The speed of 3D printing compared to traditional methods is similar to comparing a sports car's top speed to a horse cart's. They both take you where you want to go but the journey time differs considerably. With industrial 3D printers being able to 'manufacture' most objects in a matter of hours, the classical manufacturing methods, taking up to several days or even weeks (from prototype to end product), are slowly becoming obsolete.

This leads to massive cost savings and to an on-demand manufacturing model. Why should you have warehouses filled up with stocks of your products if you can create them according to demand? Even if this model might not work with the big offline manufacturers due to their dependence on offline retailers that usually buy in bulk, it can prove extremely efficient for an online business.

Less waste

Manufacturing metal and plastic objects in particular is usually a wasteful process with chunky parts and a lot of surplus material. For some aircraft makers, up to 90% of the material is being cut away and no longer useful. Making a similar object using additive manufacturing not only uses less energy but also reduces waste to a minimum. And sometimes, the finished 3D printed product can be up to 60% lighter compared to the machined part but still as sturdy according to the Economist. Significant cost savings can be achieved in this way and less waste also means a lower impact on the environment.

Better quality

Think about 3D printing ascake baking. You can make a cake by whisking some cake mix, pouring it in an oven tray and baking everything. The result may taste amazing but it can have unwanted air bubbles inside, different thickness and all nuts or fruits could be grouped to one side. However, if you could assemble the cake layer by layer similar to additive manufacturing, you could achieve perfection through a full control of where each layer is going and how it fits with the rest.

Avoiding most of the mass manufacturing faults does not only make better products but it also extends their life as they will break less often. This is not necessarily a great benefit formanufacturers who need the product life cycle to be profitable, but it is certainly a major benefit for the end consumer.

Accessibility

With more people getting access to 3D printing, it may not be long until we will all have our own multi-purpose contraption (with additive manufacturing being only one of the many functionalities) capable of creating the products we need, when we need them. This can seriouslyshake up the current consumerism culture built on the contemporary industrial supply chain nevertheless, it remains to be seen if this is only an ideology or a possible transitional period in human evolution.

Less waste compared to traditional manufacturing methods is not only a cost saving feature of 3D printing but also a possible eco-friendly attribute. Add to this the multi-purpose characteristic a 3D printer (can build different objects without the need of using specialised machines for each part) and their digital ecosystem (all 3D models are transmitted electronically so in theory they can be printed out where they are needed, minimising therefore transport costs) and you get a sustainable manufacturing process. Integrating additive manufacturing with more classic production methods – as is the case with 3D printed textiles in the clothing industry – adds another layer (excuse the pun) to the sustainability case.

New shapes and structures

Traditional manufacturing methods rely on moulds and cutting technologies to produce a finite number of shapes and structures, with more complex hollow ones having to be created from several parts and assembled together. But 3D printing changes this altogether – the 3D printer's nozzle can build an infinite number of complex figures, being limited only by human imagination. This method gives them more durability and higher structural integrity. From medical implants that resemble bone to aerodynamic parts for the space industry and from unique-shaped furniture to 3D printed jewellery, the opportunities are endless.

New combinations of materials

Mixing different raw materials is not always possible with mass-manufacturing methods due to the sometimes high costs involved and to their physical & chemical properties that make them difficult to combine through traditional methods. 3D printing has removed many of these boundaries not only because of the initial dependency on plastic (being one of the few raw

materials that melt at lower temperatures) but also because of a continuous innovation fed by enthusiasts believing that additive manufacturing's potential has not been reached yet. As aresult, many companies now offer tens of different materials with different finishes giving the look and feel of metal, ceramics or glass with various strengths and temperature resistance.

New business models

With 3D printing gaining popularity fast, entrepreneurs have not lost any opportunity to get their foot into an industry deemed by many as potentially very lucrative. This is how 3D printing 'shops' were born. Imagine going shopping in a supermarket where you decide how your products will look and feel, and where everything can be personalised to fit your demanding tastes.

7 Disadvantage Of 3d Printing

Fewer Manufacturing Jobs:

As with all new technologies, manufacturing jobs will decrease. This disadvantage can and will have a large impact to the economies of third world countries, especially China, that depend on a large number of low skill jobs.

Limited Materials:

Currently, 3D printers only manufacture products out of plastic, resin, certain metals, and ceramics. 3D printing of products in mixed materials and technology, such as circuit boards, are still under development.

Copyright:

With 3D printing becoming more common, the printing of copyrighted products to create counterfeit items will become more common and nearly impossible to determine.

Dangerous Items:

3D printers can create dangerous items, such as guns and knives, with very little or no oversight.

More Useless Stuff:

One of the dangers of 3D printers is that they will be used to create more useless stuff that is bad for the environment and wallets. Fortunately, there are new methods of automatically recycling objects made by 3D printers that hold promise of better recycling in the future.

Size:

Currently, 3D printers are limited with the size of the products that they can create. Ultimately, large items, such as houses and building, could be created using 3D printers.

8. Application

Medical :- A New Way to Heal Broken Bones

In the near future, having a broken arm could look way cooler thanks to a new, black, lightweight 3-D printed cast that's patterned like latticework and which uses an ultrasound device to make bones heal more quickly.







a new way to heal broken bones by 3d printing

.3d printed wound hill process



Scanning the wound



Filling the wound





different type of rings and jewellery

8.4. footwear





different type of footwear made by 3d printing

8.5 .3d printed car

Urbee II, a 3D-printed electric car about to go into production, boasts an ultrastrong, ultralight chassis that can take on highway rigors with ease.



Urbee II 3D printed car

8.6. bulding construction:

Building printing refers to various technology that use 3D printing as a way to construct buildings. The advantages of this would be quicker construction, lower labor costs, and less waste produced. It is also a potential way of building extraterrestrial structures on the Moon or other planets where environmental conditions are less conducive to human labor-intensive building practices.



3d printed home

8.7. Toys



Different type of toyes

8.8. Food



Different type of food

Mobile covers



different type of mobile covers

Guns



Gun made by 3d printing

8.11. human organs:-



different type of human organs using 3d printing

Conclusion

3D printing can offer benefits across the entire creation process from initial concept design to final manufacturing and all steps in between. Different applications have unique needs and understanding those application requirements is critical when choosing a 3D printer. Multiple systems may offer broader use opportunities than a single system, so identifying your unique requirements to apply 3D printing across your entire design-to-manufacture process can shorten time-to-market, improve product performance, streamline and cost-reduce manufacturing, and improve product quality and customer satisfaction will help you define the ideal 3D printing capability for your organization.



Email : sales@boranaindustries.com Website: www.boranaindustries.com

Date: 03/09/2021

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Tushar Soni**, a student of Production and Industrial Engineering 3rd Year, MBM Engineering College, Jodhpur has successfully completed 45 days of summer internship from 01.07.2021 to 14.08.2021

During this period of his internship program, he had been exposed to different processes and was found diligent, hardworking and inquisitive.

We wish him every success in his life and career.

(Authorised Signatory) For BORANA INDUSTRIES Signatory



Certificate of Training

Vaibhav Gupta

from MBM Engineering College, Jodhpur, has successfully completed a six weeks online training on **3D Printing**. The training consisted of Introduction to 3D Printing, Principles, Technologies, and Materials, The Printing Journey, Applications of 3D Printing, Merits, Advancements, and Scope and Final Project modules. In the final assessment, Vaibhav scored 88% marks. We wish Vaibhav all the best for the future endeavours.

ours

Sarvesh Agarwal FOUNDER & CEO, INTERNSHALA

Date of certification: 2021-08-02

Certificate no.: 71349FB2-0C1D-C7F1-9B52-332E617E28FB

For certificate authentication, please visit https://trainings.internshala.com/verify_certificate

Dt.

N OTICE

Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

Name of Project Supervisor : Prof. A. N. Modi

Project subject /Topic : New Techniques in Water Treatment

| S.No. | Name of Student |
|-------|------------------------|
| 1 | Atul Singh |
| 2 | Balkrishna Attal |
| 3 | Deepak Kumar Labana |
| 4 | Hansa Ramawat |
| 5 | Hanumana Ram |
| 6 | Mahipal Vishnoi |
| 7 | Mana Ram |
| 8 | Prem Prakash |
| 9 | Rahul Kumar Meena |
| 10 | Ram Pal |
| 11 | Rohit Solanki |
| 12 | Roshan Bhagora |
| 13 | Sanjay Kumar Saran |
| 14 | Sanjay Rathore |
| 15 | Sourav Singh |
| 16 | Sunil Kumawat |
| 17 | Tapendra Singh |
| 18 | Vishal Faujdar |
| 19 | Yadavendra Sharma |
| 20 | Surendra Kumar Vishnoi |

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Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

18

19

20

Prof. Suresh Kumar Sankhla

Project subject /Topic : Performance Study & Design for Retrofitting of an Old RCC Building Name of Student S.No. Pooja Saini 1 Saloni Jagwaral 2 Jeeshan Ali Chouhan 3 Gautam Sharma Ghanshyam Kumpawat 4 Khushwant Singh Rathore 5 Dharmendra Kumar Meena 6 7 Ankit Mathur 8 Damodar[,]Lal Dhaker Harshvardhan Singh Rajawat 9 10 Abhishek Gurjar 11 Deena Ram 12 Amit Kumar Meena 13 Bajrang Parihar 14 Anil Yadav 15 Hawa Singh Gurjar 16 Lekhraj Gurjar 17 Gaurav Verma

Arvind Mehra

Bhawani Singh

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Dt.

NOTICE

Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

Shri Sanu Meena Name of Project Supervisor :

Project subject /Topic : Behavioual travel Modelling

| S NO. | Name of Student |
|-------|-----------------------|
| 1 | Kaluram Meena |
| 2 | Jay Kumar Baror |
| 3 | Hemant Khatri |
| 4 | Jyoti Mittal |
| 5 | Jatin Moond |
| 6 | Harshita Jain |
| 7 | Himani Bahmania |
| 8 | Harsh Agarwal |
| 9 | Chandra Prakash Gupta |
| 10 | Shubham Verma |
| 11 | Anchal |
| 12 | Mukesh Gahlot |
| 13 | Mohit Khajuria |
| 14 | Jagrati Panwar |
| 15 | Khushbu Garg |
| 16 | Pankaj Nagar |
| 17 | Anil Kumar Fageria |
| 18 | Charu Kain |
| 19 | Mahima Dindur |
| 20 | Himanshi Saini |

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N OTICE

Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

Name of Project Supervisor : Prof. Shailesh Choudhary

Project subject /Topic : Multi Storey Building Design

| Name of Student |
|--------------------------|
| Narendra Kumar |
| Pushpa Bhardwaj |
| Monica Bunkar |
| Deepali Mathur |
| Kamal Kishore Rakhecha |
| Jahanvi Vyas |
| Richhpal Singh |
| Ritika Yadav |
| Nand Kishor Maal |
| Deeksha Ahirwar |
| Abhinav Bajal |
| Abhishek Kumar Mundotiya |
| Ravindra Lohiya |
| Jaypal Prajapat |
| Rajkumar Surana |
| Ram Lal Kumawat |
| Anshul Choudhary |
| Manju Choudhary |
| Lokesh Ahir |
| Subal Doyal |
| Jayesh Damor |
| |

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Dt.

N OTICE

Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

Prof. Peeyush Choudhary Name of Project Supervisor :

. ,

Project subject /Topic: Latest Trends in Highway Engineering

| S.No | 1 . | Name of Student | |
|------|-----|---------------------|---------------|
| 1 | | Sakshi Choudhary | |
| 2 | 1 | Vijesh Prajapat | |
| 3 | 1 | Manali Panwar | |
| 4 | - | Ashish Panchariya | |
| 5 | | Mukesh Dadhich | |
| 15 | | Mukesh Dadhich | |
| 17 | | Vedansh Solanki | |
| 8 | - | Ravina Kumari | |
| a | | Narsi Ram Gurjar | |
| F | 0 | Rohit Saimar | |
| H | 1 | Nishant Meena | |
| F | 12 | Kapil Rathore | |
| H | 13 | Naresh Kumar Pandey | |
| F | 14 | Aniruddh Guha | - |
| F | 15 | Mansi Bhati | $\frac{1}{2}$ |
| F | 16 | Manoj Bhadu | + |
| t | 17 | Mukul Bhaardwaj | - |
| | 18 | 8 Kajal Meena | - |
| | 19 | Bhartesh Choundan | - |
| | -20 | 0 Ashutosh Sharma | - |
| 3 | 2 | 1 Ayush Laudite | |
| | 2 | 2 Supriya | / |

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N OTICE

Project allotment list of the final Yr. B.E. Civil students is given below, Students are instructed to contact their Project Supervisor for further action, with immediate effect.

Name of Project Supervisor : Shri Umesh Kumar

Project subject /Topic : Hydrological Analysis in Water Basins

| S.No. | Name of Student |
|-------|-------------------------|
| 1 | Manisha Meena |
| 2 | Ayush Surana |
| 3 | Kirti Meena |
| 4 | Garima Khichar |
| 5 | Kanchan |
| 6 | Rahul Kumawat |
| 7 | Pradeep Singh |
| 8 | Pravesh Khandelwal |
| 9 | Abhilasha Choudhary |
| 10 | Amit Charan |
| 11 | Praveen |
| 12 | Raina Venposh |
| 13 | Puneet Gurjar |
| 14 | Ravi Prakash Rajpuronit |
| 15 | Hanuman Singh |
| 16 | Shubham Singn |
| 17 | Amar Bishnoi |
| 18 | Anil Mawaliya |
| 19 | Abhishek Mitta |
| 20 | Vimarsh Kaul |
| 21 | Rishabh Bharuwaj |

HEAD PROFESSOR & HEAD Dept. of Civit Engineering UR.M. Engineering Collage taculty of Engineering J.N.V. University, 10000000

4 F

DEPARTMENT OF ARCHITECTURE B. Arch IV YEAR STUDENTS LIST 2020-21 INTERNSHIPS DURING THE YEAR

| a Nin | Name of Students | |
|--------|--------------------------|--|
| 5.140. | AAROONI THAKUR | |
| 1. | BHARTI PARIHAR | |
| | ESHNA SINGH | |
| 3. | FIRDOUS KHANAM | |
| 4. | GARVIT SHARMA | |
| 6. | HARSH VARDHAN BARCHE | |
| 7. | ISHIKA AGARWAL | |
| 8. | KANIKA GUPTA | |
| 9. | KANISHK SHARMA | |
| 10. | KARTIK KHOKHAR | |
| 11. | KARTIK PARIHAR | |
| 12. | LAKSHYA KUMAWAT | |
| 13. | LAXMAN SINGH BHATI | |
| 14. | LEENA SONI | |
| 15. | NAVIDH PACHAURI | |
| 16. | NIDHI JAIN | |
| 17. | NIRIKSHA VAGHASIYA | |
| 18. | PRAJJWAL TANK | |
| 19. | PRAVEEN SINGH RATHORE | |
| 20. | PUSHPDEEP GEHLOT | |
| 21 | RISHI VIJAY | |
| 21. | RONAK LUHADIA | |
| 22. | CALIPARH SUTHAR | |
| 23. | SAURADIT DUTTE | |
| 24. | VIDDYUL VIKAS TEOTIA | |
| 25. | YASHASVI SHARMA | |
| 26. | | |
| | | |



Government of Rajasthan Department of Science & Technology Date: 6/03/2020 List of Students selected under KARYA programme

.

| S.No. | Student and Institute Name | Allotted Institute |
|--------------|--------------------------------------|--|
| 1 | Lalit Katariya. | Indian Institute of Science Education |
| đ | SPC Govt. College, Aimer | and Research (IISER), Pune |
| 2 | Sakshi Gurjar. | Indian Institute of Technology, Delhi |
| . | Maharani College, Jaipur | |
| 3 | Anjali Jain, | Indian Institute of Technology, Bhilai |
| | S.M.M. Govt. Girls College, Bhilwara | |
| 4 | Ghanshyam, | Indian Institute of Technology, Delhi |
| | MSJ Govt P.G. College, Bharatpur | |
| 5 | Himanshu Dayama, | Indian Institute of Technology, Mandi |
| | Raj Rishi Govt. College, Alwar | |
| 6 | Manendra Kumar. | Indian Institute of Technology, Bhilai |
| | MSJ Govt P.G. College, Bharatpur | |
| 7 | Naina Suthar, | Indian Institute of Technology, Mandi |
| - | SMM Govt. Girls College, Bhilwara | |
| 8 | Yashwani Saini, | Indian Institute of Technology, |
| | JDB Govt. Girls College, Kota | Kharagpur |
| 9 | Mahendra Kumar. | Indian Institute of Technology, |
| | Govt. Raj Rishi College, Alwar | kharagpur |
| 10 | Bhavna Sharma, | Indian Institute of Technology, Indore |
| | JDB Govt. Girls College, Kota | |
| 11 | Dheeraj Kumar, | Indian Institute of Technology, |
| | Govt. Raj Rishi College, Alwar | Hyderabad |
| 12 | Yuhaneez Hussain, | Indian Institute of Technology, Indore |
| | JDB Govt. Girls College, Kota | |
| 13 | Apoorva Jain, | Indian Institute of Technology, |
| | SMM Govt. Girls College, Bhilwara | Jodhpur |
| 14 | Chanchal Lodha, | Indian Institute of Technology, |
| 7 | JDB Govt. Girls College, Kota | Jodhpur |
| 15 | Priyanshi Jain, | Indian Institute of Technology, |
| | SPC Govt. Girls College, Ajmer | Jodhpur |
| 16 | Sachin Kumar Sain, | Institute of Nano Science and |
| | Raj Rishi Govt. College, Alwar | Technology (INST), Mohali |

| 17 | Harish Kuamr Sharma, | Institute of Nano Science and |
|-----------|-----------------------------------|--|
| 2547% | Raj Rishi Govt. College, Alwar | Technology (INST), Mohali |
| 18 | Kapil Dev Mahor. | Indian Institute of Technology, |
| 2-2-22-2 | SPC Govt. College, Ajmer | Hyderabad |
| 19 | Pinky Saini, | Indian Institute of Technology, Indore |
| E. S. SAN | LBS Govt. PG College, kotputli | Serie II |
| 20 | Pradeep Kumar, | Indian Institute of Science Education |
| | MSJ govt. PG. college Bharatpur | and Research (IISER), Mohali |
| 21 | Anita Khatik, | Indian Institute of Technology, |
| | SPC Govt. Girls College, Ajmer | Jodhpur |
| 22 | Ranu Verma, | Harish Chandra Research Institute, |
| • | SPC Govt. Girls College, Ajmer | Allahabad |
| 23 | Saba Praveen, | Harish Chandra Research Institute, |
| | SPC Govt. Girls College, Ajmer | Allahabad |
| 24 | Pooja jain, | Indian Institute of Technology, |
| | SPC Govt. Girls College, Ajmer | Jodhpur |
| 25 | Priyanka Saini, | Indian Institute of Technology, |
| | SPC Govt. Girls College, Ajmer | Jodhpur |
| 26 | Duchyant Singh Chouhan | CSIR- National Chemical |
| | University of Kota Kota | Laboratory, Pune |
| | University of Kota, Kota | |
| 27 | Aniali Soni | CSIR- Central Salt and Marine |
| 3 | SMM Govt Girls College, Bhilwara | Chemicals Research Institute |
| | Sinni Gova Gins Conego, Sinni and | (CSMCRI), Bhavnagar (Gujarat) |
| 28 | Saima, | Indian Institute of Science Education |
| М | JDB Govt. Girls College, Kota | and Research (IISER), Monali |
| 29 | Surbhi Panwar, | CSIR- Indian Institute of Petroleum, |
| | JDB Govt. Girls College, Kota | Denradun |
| 30 | Swapnil Singh, | Indian Institute of Technology, Manuf |
| | JDB Govt. Girls College, Kota | COID Indian Institute of Detrolium |
| 31 | Chanchal Jain, | debredup |
| | University of Kota | demadum |
| 22 | Nilitita Jangid | Indian Institute of Technology |
| 52 | Rai Richi Govt College Alwar | Hyderabad |
| 33 | Prema Mittal | Indian Institute of Technology Bhilai |
| 55 | IDB Govt Girls College Kota | multin institute of reenhology, binnar |
| 34 | Rahul Kumar soni | Indian Institute of Science Education |
| 54 | S P C Govt college Aimer | and Research (IISER), Mohali |
| 35 | | CSIR- Central Salt and Marine |
| 55 | Riya Chaturvedi, | Chemicals Research Institute |
| | JDB Govt. Girls College, Kota | (CSMCRI), Bhavnagar (Gujarat) |
| 36 | Shefali Tailor. | Indian Institute of Technology, |
| | JDB Govt. Girls College, Kota | Kharagpur |

| 27 | Cumucharan Danahal | Indian Institute of Technology |
|------|--------------------------------------|---------------------------------------|
| 37 | Gurucharan Palichal, | Hyderabad |
| | JDB Govt. Girls College, Kola | Indian Institute of Technology Indore |
| 38 | Neha Kirola, | mulan mistrate of reemology, muore |
| | JDB Govt. Girls College, Kola | COID Control Solt and Marina |
| 39 | Kumari Vishakha, Sharma, | Classicala Research Institute |
| | IDB Govt, Girls College, Kota | Chemicals Research Institute |
| | | (CSMCRI), Bhavhagar (Gujarat) |
| 40 | Bhera Ram, | Indian Institute of Technology, |
| | Jai Narayan Vyas University, Jodhpur | Jodhpur |
| 41 | Krishan Gopal, | Indian Institute of Science Education |
| | Govt. Raj Rishi College, Alwar | and Research (IISER), Pune |
| 42 | Sandhya Godara, | Indian Institute of Technology, |
| - | Govt. Dungar college Bikaner | Jodhpur |
| 43 | Simranleen Singh. | Indian Institute of Science Education |
| | Govt. Dungar college Bikaner | and Research (IISER), Pune |
| 44 | | CSIR- Central Salt and Marine |
| | BalBihari Soni, | Chemicals Research Institute |
| | MSJ College, Bharatpur | (CSMCRI), Bhavnagar (Gujarat) |
| 45 | | CSIR- Central Salt and Marine |
| 1.5 | Kirti Thanvi, | Chemicals Research Institute |
| | Jai Narayan Vyas University, Jodhpur | (CSMCRI), Bhavnagar (Gujarat) |
| 46 | | CSIR-Indian Institute of Petrolium, |
| 10 | Parul Sharma, | dehradun |
| | Govt. Dungar college Bikaner | |
| 47 | Prashant Saini. | Institute of Nano Science and |
| 1.00 | University of Kota, Kota | Technology (INST), Mohali |
| 48 | Priva Ghunawat. | CSIR- Central Salt and Marine |
| | Govt Dungar college, Bikaner | Chemicals Research Institute |
| | Soft. Dungar concept, Dunan | (CSMCRI), Bhavnagar (Gujarat) |
| 49 | | CSIR- National Chemical Laboratory, |
| 49 | Priyanka Mohanty, | Pune |
| | SRKP. Govt. PG College Kishangarh | |
| 50 | | CSIR- Central Salt and Marine |
| 50 | Rushkar Bano, | Chemicals Research Institute |
| | Govt. Dungar college Bikaner | (CSMCRI), Bhavnagar (Guiarat) |
| 51 | | CSIR- National Chemical Laboratory. |
| 51 | Pooja Pareek, | Pune |
| | M.S college, Bikaner | 1 uno |
| 50 | Davach' Trivedi | Indian Institute of Technology Mandi |
| 52 | University of Kota Kota | maran montace of reemonogy, wand |
| | University of Kota, Kota | CSIR Central Salt and Marine |
| , 53 | Farheen Rehman, | Chamicals Research Institute |
| | Govt. Dungar College, Bikaner | (CSMCRI) Rhoungger (Guigrat) |
| | | Ladian Institute of Technology |
| 54 | Omprakash, | mulan institute of recimology, |

| <u>9</u> | MSJ college, Bharatpur | Kharagpur |
|----------|---------------------------------------|--|
| 55 | Shivali Singhal, | Indian Institute of Technology, Bhilai |
| | Govt. Raj Rishi College, Alwar | |
| 56 | | CSIR- Central Salt and Marine |
| 50 | Uma Sawarkar, | Chemicals Research Institute |
| | MSJ govt. PG. college | (CSMCRI), Bhavnagar (Gujarat) |
| 57 | | CSIR- Central Salt and Marine |
| 57 | Ankit Gupta, | Chemicals Research Institute |
| | Govt. Raj Rishi College, Alwar | (CSMCRI), Bhavnagar (Gujarat) |
| 50 | | CSIR- Central Salt and Marine |
| 50 | Deepika Poonia, | Chemicals Research Institute |
| | Govt. Dungar College, Bikaner | (CSMCRI) Bhavnagar (Guiarat) |
| 50 | * | CSIR- Central Salt and Marine |
| 59 | Divya Kumari, | Chemicals Research Institute |
| | Govt. Raj Rishi College, Alwar | (CSMCRI) Bhaynagar (Guiarat) |
| | | CSIP Central Salt and Marine |
| 60 | Krati Sharma, | Chemicals Research Institute |
| | MSJ Govt P.G. College, Bharatpur | (CSMCDI) Phoymagar (Guiarat) |
| | | (CSINCKI), Bilavilagai (Oujarat) |
| 61 | Lalit Kishor Lohiva. | Classicala Bassarah Institute |
| | Govt Dungar College, Bikaner | Chemicals Research Institute |
| | Soft Dungar Compo, 2 | (CSMCRI), Bhavnagar (Gujarat) |
| 62 | Rekha Meena. | CSIR- Central Salt and Marine |
| | Govt Dungar college Bikaner | Chemicals Research Institute |
| | | (CSMCRI), Bhavhagar (Gujarat) |
| 63 | Banti, | Indian Institute of Technology, Deini |
| | Raj Rishi Govt. College, Alwar | The state of the Mark |
| 64 | Neelam Gupta, | Indian Institute of Technology, Mandi |
| | Raj Rishi Govt. College, Alwar | om 1 1 D1 1 |
| , 65 | Payal Saini, | Indian Institute of Technology, Bhilai |
| | Raj Rishi Govt. College, Alwar | |
| 66 | Pooja Gupta, | Indian Institute of Technology, |
| | Raj Rishi Govt. College, Alwar | Hyderabad |
| 67 | Radha Saini, | Indian Institute of Technology, |
| | Raj Rishi Govt. College, Alwar | Kharagpur |
| 68 | Shubham Kumar Chaube, | Indian Institute of Technology, |
| | Raj Rishi Govt. College, Alwar | Jodhpur |
| 69 | Isha Sharma, Raj Rishi Govt. College, | Harish Chandra Research Institute, |
| | Alwar | Allahabad |
| 70 | Teena Solanki, | Indian Institute of Science Education |
| 151 54 | Raj Rishi Govt. College, Alwar | and Research (IISER), Pune |
| 71 | Vanshita Jain, | Indian Institute of Science Education |
| 9.16 | M.L.V. Govt. College, Bhilwara | and Research (IISER), Mohali |
| 72 | Aakanksha Kunwar, | CSIR- Central Salt and Marine |
| * | S.M.M. Govt. Girls College, Bhilwara | Chemicals Research Institute |

| | 4 | (CSMCRI) Bhaynagar (Guiarat) |
|------|--------------------------------------|------------------------------------|
| 73 | Channama Massa | CSIR- Central Salt and Marine |
| | UDD Cost Ci 1 Ci lli Vi | Chemicals Research Institut |
| | JDB Govt. Girls College, Kota | (CSMCPI) Photmagor (Criteria) |
| 74 | Gayatri Kharadi. | CSIP Control Self |
| | University College of Sciences MI SI | Concentral Salt and Marine |
| | Udaipur | Chemicals Research Institute |
| 75 | | (CSMCRI), Bhavnagar (Gujarat) |
| | Gunjan Soni, | CSIR- Central Salt and Marine |
| | SMM Govt. Girls College, Bhilwara | Chemicals Research Institute |
| 76 | | (CSMCRI), Bhavnagar (Gujarat) |
| 10 | Isha Anchhara, | CSIR-Centre for Cellular and |
| | SMM Govt. Girls College, Bhilwara | Molecular Biology (CCMB), |
| 77 | Khatil T 1 | Hyderabad |
| 11 | Khalik Jayshree, | CSIR- Central Salt and Marine |
| | S.K.K.P. Govt. P.G. College, | Chemicals Research Institute |
| . 70 | Madanganj, Kishangarh | (CSMCRI), Bhavnagar (Gujarat) |
| /8 | Privanka Bhandari | CSIR- Central Salt and Marine |
| | JDB Govt, Girls College Kota | Chemicals Research Institute |
| | oon on sonege, Kota | (CSMCRI), Bhavnagar (Guiarat) |
| 79 | Privanka Sharma | CSIR- Central Salt and Marine |
| | Govt P.G. Girls, college Chittenersh | Chemicals Research Institute |
| | Sover 1.8 Girls conege Childorgran | (CSMCRI). Bhavnagar (Guiarat) |
| 80 | Sunidhi Chittora | CSIR-Centre for Cellular and |
| | IDB Govt Girls College Koto | Molecular Biology (CCMB) |
| | BB Gove Gins College, Kola | Hyderabad |
| 81 | Vidhi Jain, | Translational Health Science And |
| | S.M.M Govt. Girls College Bhilwara | Technology Institute Faridabad |
| 82 | Dhruti Y. Acharya, | National Institute of Plant Genome |
| | University of Rajasthan, Jaipur | research (NIPGR) New Delhi |
| 83 | Noopur Choudhary, | CSIR-Institute of Genomics and |
| | Jai Narayan Vyas University, Jodhpur | Integrative Biology Delbi |
| 84 | Abbiebel: Detal | CSIR- Central Salt and Marine |
| | Authstick Patel, | Chemicals Research Louis |
| | University of Rajasthan, Jaipur | (CSMCRI) Research Institute |
| 85 | Anita Choudhary | Regional Contra for Divid 1 |
| | University of Rajasthan Jainur | Faridabad |
| 86 | Anjali Yaday. | National Institute C Di |
| | Govt. Dungar College Bikaner | research (NIDCD) N D III |
| 87 | Balram Singh Pundir | Institute a C Ning Via |
| 1000 | University of Rajasthan Jainur | Dhuhan and Life Sciences, |
| 88 | Gauri Bhati | Diubaneswar Decimal C |
| | Jai Narayan Vyac University, Last | Regional Centre for Biotechnology, |
| 89 | Hemakshi Sharma | Faridabad |
| 07 | University of Dojosthan L | National Institute of Plant Genome |
| | Oniversity of Rajastnan, Jaipur | research (NIPGR), New Delhi |

| 90 | Jitu Ram Bhargava, | Indian Institute of Science Education |
|-----|--------------------------------------|---------------------------------------|
| | University of Rajasthan, Jaipur | and Research (IISER), Mohali |
| 91 | Meenu Kumari, | CSIR-Institute of Genomics and |
| a. | University of Rajasthan, Jaipur | Integrative Biology, Delhi |
| 92 | Pradeep Kumar Ojha, | Indian Institute of Science Education |
| | University of Rajasthan, Jaipur | and Research (IISER), Pune |
| 93 | Priyanka Nagal, | Translational Health Science And |
| | Jai Narayan Vyas University | Technology Institute, Faridabad |
| 94 | Ramesh Senwar, | Institute of Life Sciences, |
| | University of Rajasthan, Jaipur | Bhubaneswar |
| 95 | Sarita, | CSIR-Institute of Genomics and |
| | University of Rajasthan, Jaipur | Integrative Biology, Delhi |
| 96 | Shagun Sharma, | Regional Centre for Biotechnology, |
| | University of Rajasthan, Jaipur | Faridabad |
| 97 | Urja Biswas, | Translational Health Science And |
| | University of Rajasthan, Jaipur | Technology Institute, Faridabad |
| 98 | Puneet Kumar Sharma, | Institute of Life Sciences, |
| + | University of Rajasthan Jaipur | Bhubaneswar |
| 99 | | CSIR- Central Salt and Marine |
| | Dristi Kataria, | Chemicals Research Institute |
| | Jai Narayan Vyas University, Jodhpur | (CSMCRI), Bhavnagar (Gujarat) |
| 100 | | CSIR- Central Salt and Marine |
| | Bhanu Priya Kathore, | Chemicals Research Institute |
| | JDB Govt. Girls College, Kota | (CSMCRI), Bhavnagar (Gujarat) |

Project Director

B. Pharm. 12020-21

ISCON SURGICALS LTD.

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and the

(ISO 9001:2015 CERTIFIED COMPANY) B-70, Marudhar Industrial Area, Phase II, Basni, Jodhpur – 342 005 (Raj.) INDIA Tel: +91 291 2740556,57,58 ; Fax: +91 291-2740560 Email: office2@pricon.co.in ;sales@pricon.co.in ;Website: www.pricon.co.in&www.isconsurgicals.net GST NO.08AAACI3030K1ZT; CIN-U24232RJ1991PLC005963 Mfg Lic. No. : MFG/MD/2020/000064

DATE: 11.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Miss Lovisha Sharma D/o Shri P.K. Sharma Student of B. Pharmacy VI Sem.2021-2022 at Jai Narain Vyas University, Jodhpur (Rajasthan) had successfully completed his Academic Internship of from 17 Feb 2022 to 10.March 2022 (*168hrs*) at Iscon Surgicals Limited, Jodhpur in Departments of Manufacturing, Quality Control and Quality Assurance functions of Medical Devices.

During her tenure with us, we found him sincere & hard working. We wish her great success in the future.

Bhander



For Iscon Surgicals, I.td. Manager J

Regd. Office: 22/4, Heavy Industrial Area, Jodhpur - 342005 (India); Tel: +91 291 2740553

Annexure 2

We Share Healthcare

ISCON SURGICALS LTD.

(ISO 9001:2015 CERTIFIED COMPANY)
B-70, Marudhar Industrial Area, Phase II, Basni, Jodhpur – 342 005 (Raj.) INDIA
We Share Healt
Tel: +91 291 2740556,57,58 ; Fax: +91 291-2740560
Email: office2@pricon.co.in ;sales@pricon.co.in ;Website: www.pricon.co.in&www.isconsurgicals.net
GST NO.08AAACI3030K1ZT; CIN-U24232RJ1991PLC005963 Mfg Lic. No. : MFG/MD/2020/000064

DATE: 11.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Miss Jyoti Saini D/o Shri Dhan Raj Saini, Student of B. Pharmacy VI Sem.2021-2022 at Jai Narain Vyas University, Jodhpur (Rajasthan) had successfully completed his Academic Internship of from 17 Feb 2022 to 10.March 2022 (*168/ns*) at Iscon Surgicals Limited, Jodhpur in Departments of Manufacturing, Quality Control and Quality Assurance functions of Medical Devices.

During her tenure with us, we found him sincere & hard working. We wish her great success in the future.

Bhender

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

For Iscon Surgicals I id. "Manager HR"



ISCON SURGICALS LTD.

PRIC (ISO 9001:2015 CERTIFIED COMPANY) B-70, Marudhar Industrial Area, Phase II, Basni, Jodhpur - 342 005 (Raj.) INDIA We Share Health Tel: +91 291 2740556,57,58 ; Fax: +91 291-2740560 Email: office2@pricon.co.in ;sales@pricon.co.in ;Website: www.pricon.co.in&www.isconsurgicals.net GST NO.08AAACI3030K1ZT; CIN-U24232RJ1991PLC005963 Mfg Lic. No. : MFG/MD/2020/000064

DATE: 11.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Miss Mamta Choudhary D/o Shri Om Prakash Choudhary. Student of B. Pharmacy VI Sem.2021-2022 at Jai Narain Vyas University, Jodhpur (Rajasthan) had successfully completed his Academic Internship of from 17 Feb 2022 to 10.March 2022 (168hrs) at Iscon Surgicals Limited, Jodhpur in Departments of Manufacturing, Quality Control and Quality Assurance functions of Medical Devices.

During her tenure with us, we found him sincere & hard working. We wish her great success in the future.

Hondar.

IN-CHARGE PHARMACY J.N.V. UNIVERSITY, JODHPUR

For Iscon Surgicals Ltd

Manager MR"

TIN: 08622612276 (Dt. 19/03/2010) MFG.No.: RAJ-2398 (Dt. 10/06/2010)



Rudraya HEALTH CARE

1, 2nd Floor Bharat Market, Behind Shanti Tower Jalori Bari Jodhpur Phone : 0291-2430084, 9414171278, 9351685509 E-Mail : rudrayahealthcare@gmail.com

DATE:- 21/03/2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Deva ram** s/o **Shri Kishnaram ji** R/O kantiya th.Khivasar, Nagour (raj.)341025 .has undergone industrial training in our oraganization batween 21-02-2022 to 21-03-2022(150 hours) .During the entire period **Mr. Deva ram** showed interst in the manufacturing process under the guidance of our manufacturing chemist **Mr . Sumer singh.**

During the training period, the work of the student was found satisfactory.

Thanking you

Al Bhander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



190, files ender Baranada, Industrial Area

TIN: 08622612276 (Dt. 19/03/2010) MFG.No.: RAJ-2398 (Dt. 10/06/2010)

Rudraya HEALTH CARE

1, 2nd Floor Bharat Market, Behind Shanti Tower Jalori Bari Jodhpur Phone : 0291-2430084, 9414171278, 9351685509 E-Mail : rudrayahealthcare@gmail.com

DATE:- 21/03/2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Bhoma ram** s/o **Shri Chaina ram ji** R/O Dhandhaniya barada Th.Balesar, Jodhpur (raj.)342001 .has undergone industrial training in our oraganization batween 17-02-2022 to 19-03-2022(150 hours) .During the entire period **Mr.Bhoma ram** showed interst in the manufacturing process under the guidance of our manufacturing chemist **Mr . Sumer singh.**

During the training period, the work of the student was foundsatisfactory.

Thanking you

fil khunder

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR







Rajputana Agrico

Plot No. 1, Heavy Industrial Area, Near New Power House, Jodhpur, (Rajasthan) INDIA 342001 Ph +91 291 2741646 / 647 Mob. : +91 9929597904, 9950435626 Email : rajputana_agrico@yahoo.co.in Web : www.krishnaayurved.com GST No. : 08ABWPD8809M1ZU

Ref No. :

Date :

TO WHOM IT MAY CONCERN

This is to certify that Mr. Mrityunjay Singh, student of Jai Narayan Vyas University, Jodhpur (Raj), has successfully completed an internship in the field of Ayurveda industry from 16/02/2022 to 18/03/2022 under guidance of Mr. Harsh Patel.

During the period of his internship program with us, he had been exposed to different processes and was found diligent, hardworking and inquisitive.

We wish him every success in his life and career.

For Rajputana Agrico Jodhpur (Raj.)

Authorised Signature



Ail Bhander

IN-CHARGE, PHARMACY



AYAN BIOTECH

PLOT NO .20, INDUSTRIAL AREA, VILLAGE BHGWANPURA, TESHIL DERABASSI, MOHALI , PUNJAB- 140507

M.NO.7973747964,9041056942, Email Id:- ayanbiotech2014@gmail.com GSTIN- 038V8PK4324A2ZE

FSSINAI NO- 12121801000076 GSTIN- 03BVBPK4324A2ZE PAN NO- ABAFM6845J

Date-17/03/2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr JITENDRA SINGH is a student of B Pharmacy (Final year) JAI NARAIN VYAS UNIVERSITY JODHPUR (RAJ.) has undergone tranning of 156 hours in our manufacturing unit from 15.02.2022 to 13.03.2022. He has gone under training in Liquid (nutrition) and also in our testing laboratory.

He was found to be hard working,

We wish him all the success in his future career.

For AYAN BIOTECH

(NARESHUBIOTECH PROPRIETOR Prop.

fil Blander.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



NFC/2021-22/

March 21, 2022

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Mr. Shishpal Singh** S/o Shri Bhoora Ram Choudhary R/o Jawaharpura, Chand Sama, Jodhpur-345 021 (Raj.) has undergone Industrial Training in our organization between **19-02-2022** to **21-3-2022** (150 Hours). During the entire period **Mr. Shishpal Singh** showed keen interest in the manufacturing process and quality control under the guidance of our Chief Manufacturing Chemist **Mr. Shailesh Salecha**

During the training period, the work of the student was found satisfactory.

Thanking you,

for Neelkanth Finechem LLP. Authorized Signatory

of thender.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Adm, Off. : A-261, Opp. SBI Bank, 1st Phase, Boranada, JODHPUR - 342 012 (Raj.) Tel. : 02931-261188, Fax : 02931-261272 Works : G1-898-899, RIICO Industrial Area, 4th Phase, Boranada, JODHPUR (Raj.) - 342 012 India Mobile : +91-9829021177, +91-9314921177, +91-9314821177



NFC/2021-22/

March 27, 2022

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Mr. Kartik Rajpurohit** S/o Shri Ganpat Singh Rajpurohit R/o C-68, Sarswati Nagar, Basni, Jodhpur-342 005 (Raj.) has undergone Industrial Training in our organization between **27-02-2022 to 27-3-2022** (150 Hours). During the entire period **Mr. Kartik Rajpurohit** showed keen interest in the manufacturing process and quality control under the guidance of our Chief Manufacturing Chemist **Mr. Shailesh Salecha**

During the training period, the work of the student was found satisfactory.

Thanking you,

Al Bhandar.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

for Neelkanth Finechem LLP.

Authorized Signatory

Adm. Off. : A-281. Opp. SBi Bank, 1st Phase, Boranada, JODHPUR - 342 012 (Raj.) Tel. : 02931-281188, Fax : 02931-281272 Works : G1-898-899, RIICO Industrial Area, 4th Phase, Boranada, JODHPUR (Raj.) - 342 012 India Mobile : +91-9829021177, +91-9314921177, +91-9314821177 NFC/2021-22/

March 21, 2022

AN ISO 9001 : 2015 & ISO 22000 : 2005 CERTIFIED ORGANISATION

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Mr. Mukesh Kumar** S/o Shri Babu Ram R/o Devraj Garh, Devigarh, Shergarh, Jodhpur, Shergarh-342 022 (Raj.) has undergone Industrial Training in our organization between **19-02-2022 to 21-3-2022** (150 Hours). During the entire period **Mr. Mukesh Kumar** showed keen interest in the manufacturing process and quality control under the guidance of our Chief Manufacturing Chemist **Mr. Shailesh Salecha**

During the training period, the work of the student was found satisfactory.

Thanking you,

Ail Bhandes.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

for Neelkanth Finechem LLP. Ignatory

Adm. Off. : A-281, Opp. SBI Bank, 1st Phase, Boranada, JODHPUR - 342 012 (Raj.) Tel. : 02931-281188, Fax : 02931-281272 Works : G1-898-899, RIICO Industrial Area, 4th Phase, Boranada, JODHPUR (Raj.) - 342 012 India Mobile : +91-9829021177, +91-9314921177, +91-9314821177

Website : www.neelkanthfinechem.in • E-mail : nitin@neelkanthfinechem.com, neelkanthfinechem@gmail.com
Banaskantha Dist. Co-op. Milk Producer's Union Ltd. Jodhpur

Banas Dairy; Bhagirath Dairy Pvt. Ltd., Plot no./Khasra no.-74/1;Vill- Mogra Kallan, Near NH-65;Tehsil- Luni; Distt-Jodhpur (Rajasthan).-342802 .Mob. No.- 7230046076 / 7230046077

BANAS: JU: 2021-22:182

Date:19.03.2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr Bhupendra Singh** s/o **Shri Harchand Singh** Student of B.Pharmacy(Final Year) Jai Narain Vyas University, Jodhpur(Rajasthan) had successfully completed his Academic Internship of 160 hours, from 19.02.2022 to 19.03.2022. He has gone under training in testing laboratory.

He was found to be hard working.

We wish him all the success in the future career.

cherthart

Site In-charge Milk Packing Station Jodhpur Rajasthan - 342802

Banaskantha Dist. Co-Op. Milk Producer's Union Ltd.

Bhagirath Dairy Pvt. Ltd.

MPS, Jodhpur

J' Bhender

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Banaskantha Dist. Co-op. Milk Producer's Union Ltd. Jodhpur

Banas Dairy; Bhagirath Dairy Pvt. Ltd., Plot no /Khasra no.-74/1;Vill-Mogra Kallan, Near NH-65; Tehsil-Luni; Distt-Jodhpur (Rajasthan) -342802 Mob. No. - 7230046076 / 7230046077 ******

BANAS: IU: 2021-22:181

Date:19.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Mr Ritik Mathur s/o Shri Rakesh Chandra Mathur Student of B.Pharmacy(Final Year) Jai Narain Vyas University, Jodhpur(Rajasthan) had successfully completed his Academic Internship of 160 hours, from 19.02.2022 to 19.03.2022. He has gone under training in testing laboratory.

He was found to be hard working.

We wish him all the success in the future career.

Levelham

Site In-charge Milk Packing Station Jodhpur Rajasthan - 342802

Banaskantha Dist. Co-Op. Milk Producer's Union Ltd.

Bhagirath Dairy Pvt. Ltd.

MPS, Jodhpur

.

in-charge, pharmacy

J.N.V. UNIVERSITY, JODHPUR

F-351 & 350 (A). Phase II, Udyog Vihar, Sri Ganganagar (Raj.) Ph. : 0154 - 2494340 CIN : U242327BJ2001PTC01704

MFG LIC NO.RAJ2217/2218

Ref. No.- SMPL/CER/HR/21-22/04

smedicare2011@qmail.com

14.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Mr. DHIRENDRA KUMAR S/o Sh. KANA RAM student of B.Pharmacy 7th Sem. 2021-2022 at JAI NARAIN VYAS UNIVERSITY, JODHPUR . worked in this organization as a trainee student from 16/02/2022 to 14/03/2022 Of one month . During his above tenure he successfully attained the experience of manufacturing and analysis of drugs related to Oral Liquids & Tablet Section.

It is further certified that **Mr. DHIRENDRA KUMAR** is found quite Sincere, Honest, Dedicated & a dependable employee towards the works / duties entrusted to him.

We wish him all success in his future career.

Saviss Medicare Pvt. Ltd.

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IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

somme leadership through quality and excellent

SWISS MEDICARE PVT. LTD.

F-351 & 350 (A), Phase II, Udyog Vihar, Sri Ganganagar (Raj.) Ph. : 0154 - 2494340 Email : swissmedicare2011@gmail.com CIN : U24232RJ2001PTC017042

MFG LIC NO.RAJ2217/2218

Ref. No.- SMPL/CER/HR/21-22/03

14.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Mr. MOHAMMAD IKRAM S/o Sh. MOHAMMAD RAMJAN student of B.Pharmacy 7th Sem. 2021-2022 at JAI NARAIN VYAS UNIVERSITY, JODHPUR . worked in this organization as a trainee student from 16/02/2022 to 14/03/2022 Of one month . During his above tenure he successfully attained the experience of manufacturing and analysis of drugs related to Oral Liquids & Tablet Section.

It is further certified that **Mr. MOHAMMAD IKRAM** is found quite Sincere, Honest, Dedicated & a dependable employee towards the works / duties entrusted to him.

We wish him all success in his future career.



of Brender.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Our endeavour to achieve leadership through quality and excellence.



Amneal Pharmaceuticals Pvt. Ltd.

(CIN: - U424231GJ2006PTC048109)

Date: 12-Mar-2022

TO WHOMSOEVER IT MAY CONCERN

This is Certify that **Mr. Mahipal** has undergone training in **Manufacturing** Department under the supervision of **Lav Sharma** from **21-Feb-2022** to **12-Mar-2022**.

We wish him all success in his future endeavor.

Thanking you,

Yours sincerely,

For, Amneal Pharmaceuticals Pvt. Ltd

Parmeshwar'Hans General Manager - Human Resources C

dif Brandae.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Regd. Office & Corporate Address:-9th Floor, Iscon Elegance, Near Shapath – 5, Opp. Karnavati Club, Prahaladnagar Cross Roads, S.G. Highway, Ahmedabad -380015, Gujarat, India

Plant 1:- 882/1-871, Vil. Rajoda, Near Hotel Kankavati, Tal.: Bavla. Dist.: Ahmedabad-382220, Gujarat, India. Plant 2:- Plot No. 15, 16, 17 PHARMEZ (Special Economic Zone - SE2) Sarkhej Bavla Highway, Vil.- Matoda, Ta:- Sanand, Dist.: Ahmedabad – 382213, Gujarat, India. Corporate House No.18:-Magnet Corporate Park, 100 ft Hebatpur - Thaltej Road, Thaltej, Ahmedabad-380054, Gujarat, India.

Phone:- 079-67778300, FAX:- 079-67778315, Email:- info@amnealindia.com Website: www.amneal.com



Amneal Pharmaceuticals Pvt. Ltd. (CIN: - U424231GJ2006PTC048L09)

Date : 12 Mar-2022

TO WHOMSOEVER IT MAY CONCERN

This is Certify that Mr. Prakash Chandar has undergone training in Manufacturing Department under the supervision of Lav Sharma from 21-Feb-2022 to 12-Mar-2022.

We wish him all success in his future endeavor.

Thanking you,

Yours sincerely,

For, Amneal Pharmaceuticals Pvt. Ltd

an

Parmeshwar Hans General Manager - Human Resources

fil Brandes.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Regd. Office & Corporate Address:-9th Floor, Iscon Elegance, Near Shapath - 5, vith Floor, Iscon Elegance, Near Shapath - 5, Opp, Karnavati Club, Frahalaonagar Cross Roads, S.G. Highway, Ahmedabad. 380015, Gujarat, India.

Plant 1:- 382/1-871

Plant Z:- Plot No. 15, 15, 17 PHARMEZ (Sbecial Economic Zone, SE2) Sarkhej Bavla Highway, Vill-Matoba, Tar, Sanand Dist: Anmedabad – 382213, Gujarat, India

Phone:- 079-67778300, FAX:- 079-67778315, Email:- info@amnealindia.com Website: www.amneal.com

Jai Narain Vyas University (Raj.)

Page no.3



Amneal Pharmaceuticals Pvt. Ltd. (CIN: - U424231GJ2006PTC048109)

Date: 12-Mar-2022

TO WHOMSOEVER IT MAY CONCERN

This is Certify that Mr. Bharat Devra has undergone training in Manufacturing Department under the supervision of Lav Sharma from 21-Feb-2022 to 12-Mar-2022.

We wish him all success in his future endeavor.

Thanking you,

Yours sincerely,

For, Amneal Pharmaceuticals Pvt. Ltd

sam

Parmeshwar Hans General Manager - Human Resources

I Bhander.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

9th Floor, Iscon Elegance, Near Shapath - 5, Opp. Karnavati Club, Frahaladnagar Cross Roads, S.G. Highway, Ahmedabad -380015, Gujarat, India

Plant 2:- Plot No. 15, 16, 17 PHARMEZ (Special Ecoromic Zone - SEZ) Sarkhej Bavla Highway, Vil.- Matoda, Ta:- Sanand Dist.: Ahmedabad - 382213, Gujarat, India.

Corporate House No. 18:-Magnet Corporate Park, 100 it Hebatpur - Thaltej Road, Thaltej, Ahmecabad-380054, Gujarat, India

Phone:- 079-67778300, FAX:- 079-67778315, Email:- info@amnealindia.com Website: www.amneal.com

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (O) 2710581

CLINTON PHARMACEUTICALS (MANUFACTURER OF PHARMACEUTICALS PRODUCTS) OFFICE: S-4 BAJAJ NAGAR, JAIPUR-302015 FACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/98/CERTI/2021-22

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. GHANVEER SINGH SODHAis a student of B Pharma. (Final year) of JAI NARAIN VYAS UNIVERSTY, JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section and also in our Testing Laboratory.

He was found to be hard working & sincere.

We wish him all the success in his future career.

For CLINTON PHARI ACEUTICALS roprictor

(O.P. SOLANKI) PROPRIETOR



IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUP

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (O) 2710581



CLINTON PHARMACEUTICALS (MANUFACTURER OF PHARMACEUTICALS PRODUCTS) OFFICE: S-4 BAJAJ NAGAR, JAIPUR-302015 FACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/95/CERTI/2021-22

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr.BHAGIRATH PATELis a student of B Pharma. (Final year) of JAI NARAIN VYAS UNIVERSTY, JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section and also in our Testing Laboratory.

He was found to be hard working & sincere.

We wish him all the success in his future career.

s #



IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (O) 2710581

CLINTON PHARMACEUTICALS (MANUFACTURER OF PHARMACEUTICALS PRODUCTS) OFFICE: S-4 BAJAJ NAGAR, JAIPUR-302015 FACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/93/CERTI/2021-22

ed. 7 . .

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr.DEEPAK SUTHARis a student of B Pharma. (Final year) of JAI NARAIN VYAS UNIVERSTY, JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section and also in our Testing Laboratory.

He was found to be hard working & sincere.

We wish him all the success in his future career.

For CLINTON PHARMACEUTICALS For Clinton Pharmaceuticals (0.P. SOLANKI) PROPRIETOR



Al Bhander.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (O) 2710581

CLINTON PHARMACEUTICALS (MANUFACTURER OF PHARMACEUTICALS PRODUCTS) OFFICE: S-4 BAJAJ NAGAR, JAIPUR-302015 FACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/94/CERTI/2021-22

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr.DEVEN MAKWANAis a student of B Pharma. (Final year) of JAI NARAIN VYAS UNIVERSTY, JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section and also in our Testing Laboratory.

He was found to be hard working & sincere.

We wish him all the success in his future career.

For CLINTON PHARMACEUTICALS

(O.P. SOLANKI)



IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (O) 2710581

(MANUFACTURER OF PHARMACEUTICALS PRODUCTS) OFFICE: S-4 BAJAJ NAGAR, JAIPUR-302015 FACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/97/CERTI/2021-22

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr.SUDARSHAN JAKHOTIYAis a student of B Pharma. (Final year) of JAI NARAIN VYAS UNIVERSTY, JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section and also in our Testing Laboratory.

He was found to be hard working & sincere.

We wish him all the success in his future career.

For CLINTON PHARMACEUTICALS or Clinton Pharmaceuticals robrietor (O.P. SOLANKI PROPRIETOR



IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Subject to Jaipur jurisdiction only

Mob: 9414461302 Phone: (0) 2710581



PACTORY: H-160, RIICO INDUSTRIAL AREA, SANGANER, JAIPUR-302020 RAJASTHAN

Ref. No. CP/92/CERTI/2021-22

Dated: 16.03.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. KRISHAN KUMAR BENIWAL is a student of B UNIVERSTY. JODHPUR(Rajasthan), has undergone training in our Manufacturing unit from 15.02.2022 to 16.03.2022. He has gone under training in oral liquid & Tablet Section VVAS NARAIN IVI OF 10 and also in our Testing Laboratory (Final year) Pharma.

He was found to be hard working & sincere.

We wish him all the success in his future career.

For CLINTON PHARMACEUTICALS

maceuricals IC.o.3 Proprietor You Phone utical O.P. SOLANKI) PROPRIETOR and the second 10



IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Ref. No.: AML/2022/ETR/013

Date: 04.03.2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Nehal Purohit** S/o Sh. Narendra Purohit, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his industrial training from **14.02.2022 to 04.03.2022** in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Human Resource Department

Al Mendes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN . U85110012008P1C174677



ANANTA MEDICARE

LIMITED

Ref. No.: AML/2022/ETR/015

Date: 04.03.2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Vikas Bhati** S/o Sh. Narendra Bhati, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his industrial training from **14.02.2022 to 04.03.2022** in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

Al Bhendar.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN : U851 WDL2008PLC174677



ANANTA MEDICARE

LIMITED

Ref. No.: AML/2022/ETR/014

Date: 04.03.2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Nitish Kumar Barola** S/o Sh. Mitha Lal Barola, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his industrial training from **14.02.2022 to 04.03.2022** in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

fil Burnder

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN : U85110DL2008PLC174677 Ref. No.: AML/2022/ETR/016

Date: 04.03.2022

ANANTA MEDICARE

LIMITED

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Bhanu Pratap Singh Rajawat** S/o Sh. Sher Singh Rajawat, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his industrial training from **14.02.2022 to 04.03.2022** in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

dil brandae.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN : U85110DL2008PLC1746/7 R.S.T. No. 1423/00467 Dt. 29-9-95 TIN No.: 08292200450

B. Phan. (2021-22)



Mfg. Lic. No. : RAJ. 1759/2125



RIME PHARMACEUTICALS MANUFACTURERS OF INJECTABLE MEDICINES (LIQUID & DRY POWDER) EYE / EAR DROPS AND ORAL LIQUID

Ref No. PP/TC-060402022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Manish Solanki S/o Mr. Dinesh, a student of B.Pharma at Jai Narain Vyas University, Jodhpur Pharmacy, Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

He has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

He has completed his training satisfactorily. We wish him all the best for his future.

With Regards,

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Hi Buendes IN-CHARGE, PHARMACY

J.N.V. UNIVERSITY, JODHPUR

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Ref No. PP/TC-040302022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Aaliya Khan D/o Mr.Musheer Ahmed Khan, a student of B.Pharma at Jai Narain Vyas University, Jodhpur Pharmacy, Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

She has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

She has completed her training satisfactorily. We wish him all the best for her future.

With Regards,



f Brander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



PRIME PHARMACEUTICALS MANUFACTURERS OF INJECTABLE MEDICINES (LIQUID & DRY POWDER) EYE / EAR DROPS AND ORAL LIQUID

Ref No. PP/TC-050402022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.Madhav S/o Mr.Nand Kishor, a student of B.Pharma at Jai Narain Vyas University,Jodhpur Pharmacy,Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

He has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

He has completed his training satisfactorily. We wish him all the best for his future.

With Regards,



Brandes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

R.S.T. No. 1423/00467 Dt. 29-9-95 TIN No.: 08292200450



MANUFACTURERS OF INJECTABLE MEDICINES (LIQUID & DRY POWDER) EYE / EAR DROPS AND ORAL LIQUID

Ref No. PP/TC-010302022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Kaushik Solanki S/o Mr.Kamlesh Solanki, a student of B.Pharma at Jai Narain Vyas University, Jodhpur Pharmacy, Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

He has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

He has completed his training satisfactorily. We wish him all the best for his future.

With Regards,



I & mendes

IN-CHARGE, PHALMACY J.N.V. UNIVERSITY, JODHPUR



MANUFACTURERS OF INJECTABLE MEDICINES (LIQUID & DRY POWDER) EYE / EAR DROPS AND ORAL LIQUID

Ref No. PP/TC-020302022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Anam Khan D/o Mr.Naseem Ahmed, a student of B.Pharma at Jai Narain Vyas University, Jodhpur Pharmacy, Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

She has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

She has completed her training satisfactorily. We wish him all the best for her future.

With Regards,



til Grander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

R.S.T. No. 1423/00467 Dt. 29-9-95 TIN No.: 08292200450



PRIME PHARMACEUTICALS MANUFACTURERS OF INJECTABLE MEDICINES (LIQUID & DRY POWDER) EYE / EAR DROPS AND ORAL LIQUID

Ref No. PP/TC-030302022

Dated: 26/04/2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Arashi Khan D/o Mr.Naseem Ahmed, a student of B.Pharma at Jai Narain Vyas University, Jodhpur Pharmacy, Department of Pharmacy, has undergone Practical Training in our organization in Quality Control and Quality Assurance Department from 25/03/2022 to 25/04/2022.

She has been imparted training in Quality Control Department (Chemical Lab, Instrumental Lab) & Quality Assurance Department (Good Documentation Practice) of our organization.

She has completed her training satisfactorily. We wish him all the best for her future.

With Regards,



I Brander.

IN-CHARGE, PHARMACY



TO WHOMSOEVER IT MAY CONCERN

WE HEREBY CERTIFY THAT SURENDRA KUMAR STUDENT OF JAI NARAIN VYAS UNIVERSITY, JODHPUR HAS TAKEN INDUSTRIAL TRAINING IN OUR COMPANY FOR ONE MONTH FROM 29-03-22 TO 30-04-22.. DURING HIS TRAINING SESSIONS HE HAS TAKEN KEEN INTEREST

IN VARIOUS DEPARTMENTS AND FAITHFULLY AND SINCERELLY

LEARNED THE GIVEN TASKS.

WE WISH BEST OF LUCK FOR HIS BRIGHT FUTURE.

fil Grander IN-CHARGE, PHARMA ALL LINERSTY, JODHPUR

For Ellis Pharma Pvt.Ltd., Authorized Signatory.



TO WHOMSOEVER IT MAY CONCERN

WE HEREBY CERTIFY THAT POONAM SINGH STUDENT OF JAI NARAIN VYAS UNIVERSITY, JODHPUR HAS TAKEN INDUSTRIAL TRAINING IN OUR COMPANY FOR ONE MONTH FROM 29-03-22 TO 30-04-22.. DURING HER TRAINING SESSIONS SHE HAS TAKEN KEEN INTEREST IN VARIOUS DEPARTMENTS AND FAITHFULLY AND SINCERELLY

LEARNED THE GIVEN TASKS.

WE WISH BEST OF LUCK FOR HER BRIGHT FUTURE.

dif Brender

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

For Ellis Pharma Pvt.Ltd., Authorized Signatory.



TO WHOMSOEVER IT MAY CONCERN

WE HEREBY CERTIFY THAT HAMUMAN RAM VISHNOI STUDENT OF JAI NARAIN VYAS UNIVERSITY, JODHPUR HAS TAKEN INDUSTRIAL TRAINING IN OUR COMPANY FOR ONE MONTH FROM 29-03-22 TO 30-04-22.. DURING HIS TRAINING SESSIONS HE HAS TAKEN KEEN INTEREST

IN VARIOUS DEPARTMENTS AND FAITHFULLY AND SINCERELLY

LEARNED THE GIVEN TASKS.

WE WISH BEST OF LUCK FOR HIS BRIGHT FUTURE.

For Ellis Pharma Pvt.Ltd.,

Authorized Signatory.

fil Khander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



TO WHOMSOEVER IT MAY CONCERN

WE HEREBY CERTIFY THAT JITENDRA SINGH STUDENT OF JAI NARAIN VYAS UNIVERSITY, JODHPUR HAS TAKEN INDUSTRIAL TRAINING IN OUR COMPANY FOR ONE MONTH FROM 29-03-22 TO 30-04-22..

DURING HIS TRAINING SESSIONS HE HAS TAKEN KEEN INTEREST IN VARIOUS DEPARTMENTS AND FAITHFULLY AND SINCERELLY LEARNED THE GIVEN TASKS.

WE WISH BEST OF LUCK FOR HIS BRIGHT FUTURE.

fil Brander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

For Ellis Pharma Pvt.Ltd.,

Authorized Signatory.



Ref: SGFL/HRD/TRN/04/2022

Date: 23rd April-2022

"TO WHOM SO IT MAY CONCERN"

This is certifying that; **Mr. Prakash** done his industrial training in our company w.e.f. 24.03.2022 to 23.04.2022. During his training he has worked into QA/QC/Production Department under the guidance of Mr. Sujit Kumar (AGM-Operations). He was found sincere & hard working during this tenure.

We wish him all the best for his future endeavors.

For-Sanctus Global Formulations Limited

Manager-HR & Admin.

"INFCHARGE, PHARMACY

Corporate Identification No. - U29297CH2000PLC041530

Factory At. :- Khasra No. 587/588, Village Kunjhal, Backside Jharmajri, Baddi, Tehsil Baddi, Distt. Solan, (H.P.)174103, PH.: 01795-271246 URL: www.sanctusglobal.com



Ref: SGFL/HRD/TRN/04/2022

Date: 23rd April-2022

"TO WHOM SO IT MAY CONCERN"

This is certifying that; **Mr. Akash Choudhary** done his industrial training in our company w.e.f. 24.03.2022 to 23.04.2022. During his training he has worked into QA/QC/Production Department under the guidance of Mr. Sujit Kumar (AGM-Operations). He was found sincere & hard working during this tenure.

We wish him all the best for his future endeavors.

For-Sanctus Global Formulations Limited Manager-HR & Admin.

IN-CHARGE, P. MIMACY J.N.V. UNIVERSITY, JODHPUR

Corporate Identification No. :- U29297CH2000PLC041530 Factory At. :- Khasra No. 587/588, Village Kunjhal, Backside Jharmajri, Baddi, Tehsil Baddi, Distt.Solan, (H.P.)174103 ,PH.: 01795-271246 URL: www.sanctusglobal.com



Sanctus Global Formulations Limited

A WHO-GMP Certified Company Corporate Office Address :- SCO-56/57,(3rd Floor) ,Sector-17D-Chandigarh 160017

Ref: SGFL/HRD/TRN/04/2022

Date: 23rd April-2022

"TO WHOM SO IT MAY CONCERN"

This is certifying that; **Mr. Ramdyal Sangwa** done his industrial training in our company w.e.f. 24.03.2022 to 23.04.2022. During his training he has worked into QA/QC/Production Department under the guidance of Mr. Sujit Kumar (AGM-Operations). He was found sincere & hard working during this tenure.

We wish him all the best for his future endeavors.

For-Sanctus Global Formulations Limited Manager R & Admin.

fil Brandes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Corporate Identification No. - U29297CH2000PLC041530 Factory At. -- Khasra No. 587/588,Village Kunjhal, Backside Jharmajri, Baddi, Tehsil Baddi, Distt.Solan, (H.P.)174103, PH.: 01795-271246 URL: www.sanctusglobal.com



LEX-MARK HEALTHCARE LLP

R.S.No.2177, Unjha-Mehsana highway, Vill.Bhandu, Ta.Visnagar, Dist. Mehsana

Date:- 08/04/2022

To whom so ever it may concern

This is to certify that Mr. Vipul narendra jangid , B.Pharm (7th Sem) of Jai Narayan Vyas University, Jodhpur has Successfully completed his practical training in our Factory from 18th march 2022 to 7th April 2022, During the training he was exposed in various department of company, during his training he was found sincere, regular and hard working. We wish his bright future .



Lexmark Healthcare LLP Authorize signatory.

IN-CHARGE, PHANMACY " J.N.V. UNIVERSITY, JODHPUR



LEX-MARK HEALTHCARE LLP

R.S.No.2177, Unjha-Mehsana highway, Vill.Bhandu, Ta.Visnagar, Dist. Mehsana

Date:- 08/04/2022

To whom so ever it may concern

This is to certify that Mr. Hemraj parvat choudhary , B.Pharm (7th Sem) of Jai Narayan Vyas University, Jodhpur has Successfully completed his practical training in our Factory from 18th march 2022 to 7th April 2022, , During the training he was exposed in various department of company, during his training he was found sincere, regular and hard working. We wish his bright future .

Lexmark Healthcare LLP Authorize signatory

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



LEX-MARK HEALTHCARE LLP

R.S.No.2177, Unjha-Mehsana highway, Vill.Bhandu, Ta.Visnagar, Dist.Mehsana

Date:- 08/04/2022

To whom so ever it may concern

This is to certify that Mr. Tejpal Mod Singh, B.Pharm (7th Sem) of Jai Narayan Vyas University, Jodhpur has Successfully completed his practical training in our Factory from 18th march 2022 to 7th April 2022, , During the training he was exposed in various department of company, during his training he was found sincere, regular and hard working. We wish his bright future.



Lexmark Healthcare LLP Authorize signatory

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR NFC/2021-22/

April 22, 2022

ISO 9001 : 2015 & ISO 22000 : 2005 CERTIFIED ORGANISATION

TO WHOM SO EVER IT MAY CONCERN

NEEL

This is to Certify that **Mr. Rahul Jakhar** s/o Shri Bhopa Ram R/o Koduka, Tehsil Pachpadra, Patodi, Distt. Barmer has undergone Industrial Training in our organization between **23-03-2022 to 22-04-2022** (150 Hours). During the entire period **Mr. Rahul Jakhar** showed keen interest in the manufacturing process and quality control under the guidance of our Chief Manufacturing Chemist **Mr. Shailesh Salecha**

During the training period, the work of the student was found satisfactory.

Thanking you,

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

for Neelkanth Finechem LLP. Authorized anatory

Adm. Off. : A-281, Opp. SBI Bank, 1st Phase, Boranada, JODHPUR - 342 012 (Raj.) Tel. : 02931-281188, Fax : 02931-281272 Works : G1-898-899, RIICO Industrial Area, 4th Phase, Boranada, JODHPUR (Raj.) - 342 012 India Mobile : +91-9829021177, +91-9314921177, +91-9314821177 NFC/2021-22/

April 22, 2022

AN ISO 9001 : 2015 & ISO 22000 : 2005 CERTIFIED ORGANISATION

NEELKANTH FINECHEM ILP

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Ms. Kusum Chaudhary** d/o Shri Moti Ram Khadaw R/o Jaton Ka Bas, Poondloo Pundlu, Nagaur (Raj.) has undergone Industrial Training in our organization between **23-03-2022 to 22-04-2022** (150 Hours). During the entire period **Ms. Kusum Chaudhary** showed keen interest in the manufacturing process and quality control under the guidance of our Chief Manufacturing Chemist **Mr. Shailesh Salecha**

During the training period, the work of the student was found satisfactory.

Thanking you,

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

for Neelkanth Finechem LLP. Authorized Signatory

Adm. Off. A 281 Opp. SBI Bank. 1st Phase, Boranada, JODHPUR - 342 012 (Raj.) Tel.: 02931-281188, Fax: 02931-281272 Works: G1-898-899, RIICO Industrial Area, 4th Phase, Boranada, JODHPUR (Raj.) - 342 012 India Mobile: +91-9829021177, +91-9314921177, +91-9314821177



ANANTA MEDICARE

LIMITED

Ref. No.: AML/2021/ETR/009

Date: 28.12.2021

TO WHOM IT MAY CONCERN

This is to certify that Ms. Neha Soni D/o Sh. Anil Soni, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed her industrial training from 08.12.2021 to 28.12.2021 in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

Ail brandas.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 + Email : infosgnr@anantamedicare.in

Corporate & Regd. Office: 621, Ring Road Mall, Sector 3, Rohini, Delhi-110 085 Tel: 011-47050531 Fax: 011-47050532 · E-mail: info@anantamedicare in · CIN: U851100L2008PLC174577


ANANTA MEDICARE

Ref. No.: AML/2021/ETR/008

Date: 28.12.2021

TO WHOM IT MAY CONCERN

This is to certify that Ms. Jyoti Parmar D/o Sh. Kailash Narayan Parmar, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed her industrial training from 08.12.2021 to 28.12.2021 in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

Al Bhandes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN : U85110DL2008PLC174677



ANANTA MEDICARE

Ref. No.: AML/2021/ETR/010

Date: 28.12.2021

TO WHOM IT MAY CONCERN

This is to certify that Mr. Kartik Parihar S/o Sh. Balveer Singh, a student of B.Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his industrial training from 08.12.2021 to 28.12.2021 in Dry Powder For Injection Unit of Ananta Medicare Ltd., Sri Ganganagar (Rajasthan).

For Ananta Medicare Ltd.



Manager Human Resource Department

of Brandes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Factory : Chak 17 ML Road, Agro Food Park Road, RIICO Industrial Area, Udyog Vihar, Sri Ganaganagar-335002, Rajasthan. Tel: 0154-2494110 • Email : infosgnr@anantamedicare.in

Corporate & Regd. Office : 621, Ring Road Mall, Sector-3, Rohini, Delhi-110 085 Tel : 011-47050531 Fax : 011-47050532 • E-mail : info@anantamedicare.in • CIN : U85110DL2008PLC174677



NMC/22-23/35-

Date: 30.05.2022

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Ms. Sushila D/O** Shri Bhagaram ji has taken Industrial Training at our Factory Premises (company DL. No RAJ/1636) under the Guidance and Supervision of Mr.Rajendra Salecha From **25.03.2022 to 20.04.2022**.

During the training period the conduct of the student was found satisfactory.

For Neelkanth Minechem

Authorize Signatory

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



NMC/22-23/349

Date: 30.05.2022

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that Ms. Bhanwari D/O Shri Sukharam ji has taken Industrial Training at our Factory Premises (company DL. No RAJ/1636) under the Guidance and Supervision of Mr Rajendra Salecha From 25.03.2022 to 20.04.2022.

During the training period the conduct of the student was found satisfactory.

For Neelkanth Minechem

Authorize Signatory

Al Brander

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Scanned by CamScanner



Factory SP 289(A),RIICO Indl. Area, Chopanki, Bhawadi, Distl. Alwar, Rajasthan (India), Ph.: +91-1493-516560/61/63, Fax: +91-1493-516562 E-mail : kusumhealth@kusumhealthcare.com, Website : www.kusumhealthcare.com CIN No. : U65929DL1997PTC085780

10 JUL 2022

TO WHOM SO EVER IT MAY CONCERN

THIS IS TO CERTIFY THAT MR. KAMLESH KUMAR S/O SH. MOHAN LAL BISHNOI STUDENT OF JAI NARAYAN VYAS UNIVERSITY JODHPUR HAS UNDERGONE TRAINING AT KUSUM HEALTHCARE PVT. LTD. BHIWADI, DISTRIC-ALWAR (RAJASTHAN) IN OUR QC & PRODUCTION DEPARTMENT FROM DATED 21.05.2022 TO 19.06.2022.

DURING THE PERIOD OF HIS TRAINING WE FOUND HIM TO BE A SINCERE, SINCERE, HARDWORKING AND KEEN TO LEARN VARIOUS ASPECTS OF OUR PHARMACEUTICAL PLANT.

WE WISH HIM ALL THE BEST FOR HIS FUTURE ASSIGNMENTS.

FOR KUSUM HEALTHCARE PVT. LTD.

- Dijion

AMIT SHARMA (OT T (SR. MANAGER-HR & ADMIN.)

Albrendes

INCHARGE, PHARMACY



Regd. Off.: D-158 A, Okhla Industrial Area, Phase-I, New Delhi-110020 Ph. +91-11-41005147, 40514919, 41010571, Fax: +91-11-40527575

WHO GMP Approved Plant

Certificate: QEC24935, CEM 20842



Factory:SP 289(A):RIICO Indi: Area, Chopanki, Bhawadi, Distt. Alwar, Rajasthan (India), Ph.: +91-1493-516560/61/63, Fax: +91-1493-516562 E-mail: kusumbealth@kusumbealthcare.com, Website: www.kusumbealthcare.com CIN No.: U65929DL1997PTC085780

12 JUL 2022

TO WHOM SO EVER IT MAY CONCERN

THIS IS TO CERTIFY THAT MR. SATYAPRAKASH S/O SH. JASA RAM STUDENT OF JAI NARAYAN VYAS UNIVERSITY JODHPUR HAS UNDERGONE TRAINING AT KUSUM HEALTHCARE PVT. LTD. BHIWADI, DISTRIC-ALWAR (RAJASTHAN) IN OUR QC & PRODUCTION DEPARTMENT FROM DATED 21.05.2022 TO 19.06.2022.

DURING THE PERIOD OF HIS TRAINING WE FOUND HIM TO BE A SINCERE, SINCERE, HARDWORKING AND KEEN TO LEARN VARIOUS ASPECTS OF OUR PHARMACEUTICAL PLANT.

WE WISH HIM ALL THE BEST FOR HIS FUTURE ASSIGNMENTS.

FOR KUSUM HEALTHCARE PVT. LTD.

41) 12/7/222

AMIT SHARMA (SR. MANAGER-HR & ADMIN.)

He Brandee.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Regd. Off.: D-158 A, Okhia Industrial Area, Phase-I, New Delhi-110020 Ph. +91-11-41005147, 40514919, 41010571, Fax: +91-11-40527575



Ref No. PB/L22/009

PHARMA BIOLOGICAL G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 GSTIN : 08ANXPA4942M3ZB | FSSAI License No. : 12216027000293 Mobile : +91-98290-78763, 97992 21409 E-mail : pinkcitypharma92@gmail.com

Date 16 04 622

TO WHOM IT MAY CONCERN

This is to certify that **Ms. Ayushi Pandey** D/o Mr. Narendra Kumar Pandey, a student of B. Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed her Industrial Training from **22.03.2022 TO 16.04.2022** in Nutraceutical Manufacturing unit of **M/s PHARMA BIOLOGICAL**, G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 (Raj.).

Name : Mr. Kushagra Agrawal

Department and position : Managing Director

Company seal (Sign)



Al Bliendes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Innovation at its best.

Ref No. PB/122/007

PHARMA BIOLOGICAL G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 GSTIN : 08ANXPA4942M3ZB | FSSAI License No. : 12216027000293 Mobile : +91-98290-78763, 97992 21409 E-mail : pinkcitypharma92@gmail.com

Date 16/04/2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Sharwan** S/o Mr. Ganesh Ramji, a student of B. Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his Industrial Training from **22.03.2022 TO 16.04.2022** in Nutraceutical Manufacturing unit of **M/s PHARMA BIOLOGICAL**, G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 (Raj.).

Name : Mr. Kushagra Agrawal

Department and position : Managing Director

Company seal (Sign)



fil brandes

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Ref No. PB/L22/008

PHARMA BIOLOGICAL G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 GSTIN : 08ANXPA4942M3ZB | FSSAI License No. : 12216027000293 Mobile : +91-98290-78763, 97992 21409 E-mail : pinkcitypharma92@gmail.com

Date 16/04/2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Praveen Rathi** S/o Mr. Hemraj Rathi, a student of B. Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his Industrial Training from **22.03.2022 TO 16.04.2022** in Nutraceutical Manufacturing unit of **M/s PHARMA BIOLOGICAL**, G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 (Raj.).

Name : Mr. Kushagra Agrawal Department and position : Managing Director

Company seal (Sign)



Al Brandes

IN-CHARGE, THE MARCY



Ref No. PB/L22/010

PHARMA BIOLOGICAL G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 GSTIN : 08ANXPA4942M3ZB | FSSAI License No. : 12216027000293 Mobile : +91-98290-78763, 97992 21409 E-mail : pinkcitypharma92@gmail.com

Date 16 04 2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Hanumant Choudhary** S/o Mr. Ashwini Kumar Choudhary, a student of B. Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed his Industrial Training from **22.03.2022 TO 16.04.2022** in Nutraceutical Manufacturing unit of **M/s PHARMA BIOLOGICAL**, G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 (Raj.).

Name : Mr. Kushagra Agrawal

Department and position : Managing Director

Company seal (Sign)



Al khan

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



PHARMA BIOLOGICAL G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 GSTIN : 08ANXPA4942M3ZB | FSSAI License No. : 12216027000293 Mobile : +91-98290-78763, 97992 21409 E-mail : pinkcitypharma92@gmail.com

Innovation at its hest

Ref No. PB/L22/011

Date 16/04/2022

TO WHOM IT MAY CONCERN

This is to certify that **Ms. Riya Raisinghani** D/o Mr. Kamlesh Raisinghani, a student of B. Pharma, at Jai Narain Vyas University, Jodhpur, Rajasthan has completed her Industrial Training from **22.03.2022 TO 16.04.2022** in Nutraceutical Manufacturing unit of **M/s PHARMA BIOLOGICAL**, G-104, RIICO Industrial Area, Prahladpura, Tonk Road, Jaipur-302022 (Raj.).

Name :`Mr. Kushagra Agrawal Department and position : Managing Director

Company seal (Sign)



IN-CHARGE, PHARMACY J.N.J. UNIVERSITY, JODHPUR



Date: 14TH March, 2022

SUB: INTERNSHIP COMPLETION LETTER

We are glad to inform you that Mr. Abhishek Joshi from Jai Narain Vyas University, Jodhpur has successfully completed his internship at Labron Healthcare Pvt Ltd from 14-03-2022 to 13-05-2022.

During his internship, he was exposed to the various activities in testing and analysis of fixed dose drug formulations under our Head QC Chemist Mr. Dipak Patel.

We found him extremely inquisitive and hard working. He was very much interested to learn the processes and also willing to put his best efforts and get in to the depth of the subject to understand it better.

His association with us was very fruitful and we wish him all the best in his future endeavors.

For Labron Healthcare Pvt Ltd

and

Rajeev Agrawal Director

I Grandes.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

Works.

Plot no. 156-163, G.I.D.C. Ranasan, Tal. Vijapur Dist. Mehsana-382855 Gujarat (India) Ph: 98250 46922

email: info.tabron@gmail.com, gov.tabron@gmail.com Ph: 98258 45426, 94270 26274 GST NO.: 24AAMCA3621N1ZK Admin Office: 7. Sahjanand Estate, Sarkhej, S.G. Highway, Ahmedabad-382210 Gujaraf, India, Ph. 94263 00496



Date: 30th April 2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. Jai Kishan Suthar** s/o Shri Madan Lal, student of B. Pharmacy in Pharmacy Department, Jai Narain Vyas University, Jodhpur, Rajasthan, has worked in our organization from 04th April 2022 to 30th April 2022 as apprentice trainee (as part of his B. Pharm. Curriculum) in Analytical Development, Quality Control Department and Purification department.

Mr. Suthar is very sincere, hardworking and methodical in work and learnt the techniques of analysis and purification.

We wish him all the very best for his future endeavors.

Authorized signatory For Omgene Life Sciences Pvt. Ltd.



Bhander.

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP)2020 ONLINE



CERTIFICATE



Name: PRAVEEN KUMAR SI. No.: CSIR/SRTP/2020/NEIST/5939

has completed all the requirements of the CSIR-Summer Research Training Program (CSIR-SRTP) 2020 online during June to August, 2020 coordinated by CSIR-NEIST, Jorhat



DR. G. NARAHARI SASTRY DIRECTOR CSIR-NORTH EAST INSTITUTE OF SCIENCE AND TECHNOLOGY

PROF. ALOK DHAWAN DIRECTOR CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH

DR. SHEKHAR C. MANDE DIRECTOR GENERAL, CSIR SECRETARY, DSIR, GOVT. OF INDIA











JUNE TO AUGUST, 2020

SL.NO: CSIR/SRTP/2020/NEIST/0380

NAME: HEENA KANWAR

CSIR IND'P







CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP)2020 ONLINE





CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP) 2020 ONLINE HAS THE FOLLOWING ACTIVITIES

Eminent Scientist Lectures, Special Sessions, Project specific classes, Elocution video, Poster designing, Essay writing, Assignments / Project works given by mentor/coordinator & Summer Research Project Completion Report

GRADE: A

HOST INSTITUTE: CSIR-NEIST MENTOR'S NAME: Dr. Shubhadeep Roychoudhury

REMARKS

MENTOR





CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP)2020 ONLINE



CERTIFICATE



Name: HEENA KANWAR SI. No.: CSIR/SRTP/2020/NEIST/0380

has completed all the requirements of the CSIR-Summer Research Training Program (CSIR-SRTP) 2020 online during June to August, 2020 coordinated by CSIR-NEIST, Jorhat



DR. G. NARAHARI SASTRY DIRECTOR CSIR-NORTH EAST INSTITUTE OF SCIENCE AND TECHNOLOGY

PROF. ALOK DHAWAN DIRECTOR CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH

DR. SHEKHAR C. MANDE DIRECTOR GENERAL, CSIR SECRETARY, DSIR, GOVT. OF INDIA





GOVERNMENT OF RAJASTHAN DEPARTMENT OF SCIENCE & TECHNOLOGY

This is to certify that

Gauri Bhati

Jai Narayan Vyas University, Jodhpur has successfully completed fourweek e-internship on "Advanced Plant Biology & Biotechnology"

under supervision of Dr. Mukesh Kumar, Associate Professor at Indian Institute of Technology, Ropar from 22/06/2020 to17/07/2020 under KARVA Programme of Department of Science & Technology, Government of Rajasthan

(K.C. Verma) Secretary, S&T







सीएसआईआर - राष्ट्रीय विज्ञान संचार एवं सूचना स्रोत संस्थान CSIR - National Institute of Science Communication and Information Resources वैज्ञानिक एवं औद्योगिक अनुसंघान परिषद Council of Scientific & Industrial Research (विज्ञान एवं प्रौद्योगिकी मंत्रालय, भारत सरकार Ministry of Science & Technology, Govt. of India)



Certificate

This is to certify that **Ms. Noopur Choudhary** has successfully completed a four-week online training programme pertaining to DST-KARYA-INYAS einternship on "Advanced Plant Biology & Biotechnology" from June 22 - July 17, 2020 from CSIR-National Institute of Science Communication and Information Resources, New Delhi under my guidance. Noopur was punctual, attentive, and diligent throughout the programme, and her report submitted to the undersigned qualifies her for the award of this certificate.



(Charu Lata

Zhe table: CHIT 11 25,001 Lata Sorth 2 2010 Compared that exercise CSR National Institute of Spence Communication and Information Resources 14, Teleff Retit with at Reven-110067 14, Satsang Vihar Marg. New Dethi-110067

विज्ञान संचार भवन, डॉ. के.एस. कृष्णन मार्ग, पूसा, नई दिल्ली-110012, भारत Vigyan Sanchar Bhawan, Dr. K.S. Krishnan Marg, Pusa, New Delhi-110012, India फोन Phone: +91-11-25846301,25842303; 25846304-7, 25842990, 25840602, 25847544, 25847566 फैक्स Fax: +91-11-25847062, 25849949 विज्ञान सूचना भवन, 14, सल्संग विज्ञस मार्ग, नई दिल्ली-110067 Vigyan Suchna Bhawan, Satsang Vihar Marg, New Delhi-110067 फोन Phone: +91-11-26560141, 26560143, 26560165: फैक्स Fax: +91-11-26862228 ई-मेल E-mail: coa@niscait.res.in वेनसाइट Website: www.niscait.res.in

Government of Rajasthan Department of Science & Technology 506, IV Floor, Mini Secretariat, Banipark, Jaipur

F.22(1)DST/EDP/2017/2366

Dated: 6 3 2020

Ms Priyanka Nagal 62, Sangam Nagar, Basni, Jodhpur, Rajasthan, Pin- 342001

With reference to your application submitted under KARYA programme of Department of Science & Technology, Government of Rajasthan, we are glad to inform you that you have been allocated Translational Health Science And Technology Institute, Faridabad Following actions need to be taken by you:

- 1. You have to provide your acceptance within 15 days from issue of this letter by dropping an email to <u>karya.dst.rajasthan@gmail.com</u> or sending a mail to 506, IV Floor, Mini Secretariat, Banipark, Jaipur. Failing to do so is liable to rejection of your eligibility of availing this scheme.
- 2. You have to interact with the Supervisor through Skype/E-mail. Final Selection is subject to the condition of acceptance by the supervisor.
 - 3. You have to directly contact the supervisor which will be intimated separately by DST through email with a copy to karya.dst.rajasthan@gmail.com
 - 4. After finalization of your dates with consent from supervisor for eight weeks, you have to immediately inform at karya.dst.rajasthan@gmail.com.
 - 5. The fellowship of Rs. 14000/- (Fourteen thousand only) for first four weeks will be released in the bank account of yours after receiving copy of report (soft and hard copy both) of work verified by the allotted supervisor.
 - 6. You have to pay for accommodation, food, and other charges as per the allotted institution rules.
 - 7. Discipline and all other rules of allotted institution need to be followed strictly by you, failing of which will result in immediate withdrawal of fellowship and from programme.
 - 8. At the end of eight weeks, final report verified by supervisor need to be submitted (soft & hard copy both) for release of final amount of fellowship.
 - 9. You may also fill TA form and the hard copy of the same is to be mailed at address '506, IV Floor, Mini Secretariat, Banipark, Jaipur and also should also be sent by email on the email ID 'karya.dst.rajasthan@gmail.com'. TA for Bus fair or Second class sleeper train fair by shortest route only would be reimbursed.
 - 10. An orientation workshop will be held on April 3rd 2020 at Birla Institute of Scientific Research, Jaipur. You have to present for this orientation workshop.

This bears approval from competent authority.

Enclosed

i. Format of joining Report

Project Director

Copy for necessary information:

- 1. Director, Translational Health Science And Technology Institute, Faridabad
- 2. Chief Account Officer, Department of Science & Technology, Mini Secretariat, Banipark, Jaipur
- 3. Principal, Jai Narayan Vyas University
- 4. Guard File

त्राद्यीगिको विभाग विज्ञान एव जयप्र



GOVERNMENT OF RAJASTHAN DEPARTMENT OF SCIENCE & TECHNOLOGY

Certificate

This is to certify that Priyanka Nagal

Jai Naragan Yyos University, Jodhpur has successfully completed eight week e-internship on "Different Binchmical techniques for Studying Cellular Signaling" under supervision of Dr. Amit Tuli, Principal Scientist at CSIR-Institute of Microbial Technology, Chandigarh from 19706/4020 to 27408/2020 under KARVA Programme of Department of Science & Technology, Government of Bajasthan

(K.C. Verma Secretary. Stat



| S.No | Name of Students | Class | Name of The Hospital Where They Are Going For Pharmacy Practice | Date of Submission of Report To The College After Visiting The Hospital |
|------|---|-----------------------------|--|---|
| 1. | Ram, Hiterk, hopay Manphis/ Singh | D. Pharm final year | Mahatma Grandhi Hospitor, Jocleyni | 31/11/2021 |
| 2. | Anvind, Ankit, Jitendrg, Chirag, Harhurk | D. pharm final year | ATTMLS, Hospital Bashi, Jodhpun | 09/12/2021 |
| 3. | Vishakha, Jyoti Rayu, Ranesh | D. Pharmy Stinof Jean | Satellite Hospital, Jodhpur | 03/12/2021 |
| 4. | Kaju, Bhagwati Lokesh, Abhishek | D.pharm tinot year | AFEMS, Hospiter Dewni, Jodupm | 08/12/2021 |
| 5. | Shoitan, yogesh Sarwan, tilok Havish, Mangila | D. pharm Finel Year | Mathurnospiler, | 14/12/2021 |
| 6. | Riya, Anam, Kaushik, Manumant Arshi Manish | Bo Phanni Hiney year | AEIMS, Hospitar Bashi, Jodhpur | 29/12/2021 |
| 7. | Akash, Bhanwari, Kusum, Rahul, Ramdayal, Santosh | B. Phann Jinat Year | Mathura Das Mathur Hospita, Jodhpus | 01/02/2022 |
| 8. | Raveen, Machar Aaliya, Ayushi, | B. pham ofinal year | Pr. Sarvepalli, Radha Ksishna, Rayasthon Ayurred University | 28/12/2021 |
| 9. | Neha, Kartik, JyAi, Jaiksishan | B. phorm Final year | Dr. Sarrepalli, Radha Icristina, Rajasthan Ayurred University | 16/02/2022 |
| 10. | Devicaron, Prena, Sakshi, meenakshi, Maniter, Sunij | D. pharm Second | Kamla Nehru hospital | 4/12/2021 |
| 11. | | <u> </u> | | |

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| 27. | | |
| 28. | | |
| 29. | | |
| 30. | | |

Supervisor Teacher

(Ashwin Singh Chouhan)

Pharmacy Incharge

(Dr. Anil Bhandari)



JAI NARAIN VYAS UNIVERSITY, JODHPUR (RAJ.) INDIA Department of Chemistry-Pharmacy

Ref. No : JNVU/ Pharmacy/ 2022/ 510

Date: 15/2/22

To,

Registrar

Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur

SUBJECT: - Permission to our students for visit to your hospital/pharmacy

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary with respect to Pharmacy/ Compounding / Dispensing of drugs.

Therefore we are sending Neha Soni, Kartik Parihar, Jyoti Parmar, Jai Krishan Suthar to visit and interact with concern person and visit your prestigious hospital.

Kindly allow them and overview them various functionary of Compounding / Dispensing

of drugs in hospital and pharmacy.

With regards

All Shander

Pharmacy Incharege

HOSPITAL PHARMACY REPORT



For the partial fulfilment of

B. PHARM VI SEMSESTER (2021-22)

TOPIC NAME

Visit To DSRRAU JODHPUR

SUBMITTED TO:

ASHWIN SINGH CHOUHAN

SUBMITTED BY:

NEHA, JYOTI, KARTIK, JAIKISHAN



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JAI NARAIN VYAS UNIVERSITY, JODHPUR (RAJ.) INDIA

Department of Pharmacy

Pharmacy practices

Date:- 16.2.2022

·COM

Name of student:- Neha, Tyoti, Kastik, Jaikidran Class:- B. Pharm 6th Sem.

Name of hospital:- Dr. Sarvepalli Radhakishnan Rajasthan Ayurved University. Name of doctor and contact number and email address:-



University College of Ayurved Dr. S.R. Rajasthan Ayurved University, Jodhpur



Picture with Pharmacy Incharge - Dr. Manisha Groyal Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University has its own Teaching Hospital with OPD and IPD facilities & a well equipped laboratory within DSRRAU main campus at Kadwad hospital with Biowaste disposal management system,, Jodhpur. The specialized OPD services in Kayachikitsa, Panchkarma, Shalya, Shalakya, Stri-Prasuti, Bala Roga, Swasthya Rakshan, Nasha Mukti Unit, Dental Unit , Geriatric Unit , Cancer Unit, Diabetes Clinic , Dispensing Unit and emergency are available in this hospital. Presently Indoor Patient Services are available with 196 beds in the hospital along with the facility of distribution of meals, milk, medicines, wellness centre and recreational facilities free of cost. The university hospital has a well developed Shalya-karmagar (O.T.) and Panchkarma-karmagar where a large number of patients are getting treatment every day.

In the manufacturing section there was some modern technique machines like pulverizer machine, mass mixture, shifter, liquid filling machine, tray dryer etc. and some ancient techniques of rasashaastra (science of mercury) were used. It is a specialized branch of Ayurveda dealing mainly with materials which are known as 'Rasa dravyaas'. The products dealt under this discipline are an important component of Ayurvedic therapeutics

Some minerals could not be consumed in their natural form. The belief that intensive and elaborate processing is required to make them fit for therapeutic utilization lead to the evolvement of sophisticated processing procedures. A distinct principle of producing a drug, compatible with human body, is observed in the processing of mineral substances. This treatment makes the processed material compatible and facilitates its easy assimilation.

A different technique observed was preparation of Bhasma. Bhasma was prepared by two ayuredic pharmaceutical technique : 'Shodhana' (therapeutic purification) and 'Maarana' (incineration of metals/minerals by treating them with specifically prescribed medicinal herb), to convert hard metal/mineral into fine and soft powder termed as 'Bhasma'.

1. SHODHANA

- Mercury was used in preparation of bhasma . Use of mercury in therapeutics revolutionized the management of disease. Use of mercury in therapeutics was started as a bio-enhancer rather than as a drug. Combination of mercury with any drug was supposed to reduce its dose and increase its efficacy manifolds. Mercury was first processed to make it therapeutically purified (Suddha Parada) and then it is transformed into stable and non-toxic compounds which are therapeutically effective (Baddha or Murcchita Parada). The basic material used in the preparation of most of the mercury based drugs, is a compound of mercury and sulphur prepared by grinding them together. This compound of mercury is a black coloured fine powder. It is termed as 'Kajjali', due to its resemblance to collyrium, with respect to its colour and softness.
- The procedure for preparation of drug involved following stages:
- 1. Preparation of kajjali
- 2. Controlled heating of kajjali(carried out in a narrow mouth high long neck glass flask termed as 'Kupi' kept in a specially prepared Sand Bath termed as 'Vaalukaa Yantra'.)
- 3. Heating (in specially designed "culhaa" made of bricks)
- 4. Process of opening of kupi.



yantras

Packaging: -



Vedic Judi



Normal/Modven Pudi

Many yantras were used in preparation of different types of bhasma.

2. MAARANA

- It is principally a process of incineration or calcination. It is carried out in following stages: 'Bhaavana' (Wet grinding) and 'Putapaaka' (Incineration).
- The process starting from 'Bhaavana' (wet grinding) to the completion of 'Putapaaka' (incineration) constitutes one 'Puta'. This 'Puta' process needs to be repeated till a fine powder i.e. 'Bhasma' of required quality is obtained.
- The 'Puta' is defined as a device to provide measured amount of heat to produce adequately digested product are described under different names to indicate the size of the pit and the number of cow dung cakes to be used as fuel.
- Bhaavana (wet grinding) is done in order to reduce particle size and to increase the effect of drug and reduce the dose.

Different shapes of mortar and pestle was used for mixing and grinding. The different shapes of mortar and pestle were oval, round, hexagonal etc.

Packaging of medicine was also done in a different manner(vedic pudi for single dose and normal pudi for multipledose).

Storage of raw herbs and dry powders was done in separate area in large containers. The processed drug and medicine was stored separately and was packed and labeled for dispensing.

There was a Quality Control lab where different pharmaceutical testing of inprocess and processed drug was done. The QC lab contained a soxhlet apparatus, infrared moisture meter, tablet hardness tester, friability tester, muffle furnance, clavenger apparatus, eye piece micrometer.

A small museum displaying different models of techniques used and metals, minerals, element used there in production of different ayurvedic dosage form was also there.

THE ROLE OF PHARMACIST IN A HOSPITAL

ALENDER DRAMA

- 1. Compounding & dispensing for indoor & outdoor patient department.
- 2. Manufacture of ayurvedic dosage form. Ex:- vati, churna, bhasma, herbal cough syurp, leh etc.
- 3. Managing raw and finished products and is qualified to dispense Ayurvedic drugs at hospitals and dispensaries.
- 4. Filling & labeling of medical containers.
- 5. Proper dispensing of medicine.
- 6. Proper maintenance of records of medicine.
- 7. Maintaining sufficient stock of antidote for poisoning & emergency medicine.
- 8. Detailing about medicine to physicians, internees & nurses etc.
- 9. Keeping controls over requisition & dispensing of all medicine.
- 10. Planning & executing the pharmacy & therapeutic committee.
- 11. Implementation of decision of pharmacy & therapeutic committee.
- 12. Preparation of periodic report, annual report & budget etc.



pes of Puta

normer and perfective way and the angula dec. normer and perfective way also done in a different manner(vedic purit for single dose of actual ask for multimedates.





Infrastructure


RESPONSIBILITIES AND FUNCTIONS OF HOSPITAL PHARMACIST

Different propagation

Pharmacists working in this field are responsible for dispensing of medications, quality testing, formulating and re-formulating dosage forms, monitoring and reporting drug safety, and preparing budges for medications. They are also responsible for medication storage and planning for medication quantities for their hospitals.

Typical day of hospital pharmacists may include the following activities:

- 1. Managing pharmacy-related services and logistics 24/7
- 2. Prescribing medications and ensuring their safety and efficacy
- 3. Preparing all the medications and converting dosage forms to the applicable situation
- 4. Contacting all healthcare provider for medication-related issues
- Participating in clinical rounds run by all healthcare providers and attending pharmacymanaged clinics.
- 6. Providing adequate statistics on medication consumptions.
- 7. Managing medication stores and planning for medication budgets
- 8. Conducting pharmacy-related training for under- and postgraduates
- 9. Supervising pharmacy-related research activities

INFRASTRUCTURE

- 1. Located in the ground floor and in the first floor.
- 2. Sufficient space for seating of patients.
- 3. It contained educative posters on health , hygiene and offer literature for reading.
- Suitable space routine manufacturing of ayurvedic preparations (churna, leh ,vati, bhasma and ointments etc.)
- Ayurvedic dosage storage and dispensing area

- 6. Office of the chief
- 7. Packaging and labeling area
- 8. Cold storage area
- 9. Research wing
- 10. Pharmacy store room
- 11. Library
- 12. Quality control lab
- 13. Pharmacy museum

PRESCRIBED MEDICATION ORDER AND COMMUNICATION SKILLS

Prescribed medication order is the written directions which are the primary means by which prescribers communicate with pharmacists regarding the specific treatment regimen for a patient. The prescribers may also give medication orders verbally or non-verbally. The medications are sold only on clear, complete, and signed prescription orders.

Medication orders are needed to must have the following points:

- Patient name.
- Name and Strength of medication.
- Dose.
- Dosage form.

- Time or frequency of administration.
- Route of administration.
- Quantity to dispense.
- Prescriber name and signature.

Different preparation





Inventory management) Deurg store, management is hased on inventory ontrol to supply the medicine OR drug on time check expires medicine Managment Of mangotic drug & etc drug. To management of Parental drug which requised referigerator. The Maderin computerization of Inventory Control are used in Now days. The pharemacist should manage the other product like some cosmetic creams Sanitory Pade, condom etc.

Medication CHHONS =) Medication enhous cause by WHMA Houte whong time whong dung whong dosage parma Patient does not recieve a given dose by the time Whong patient doing given whong dwiath on of therapy higher amount of dose. Dung interaction, Incompalibility of drug, completness of preckeption etc ferctars are involves in Medication errors.

Visit the In-Patient pharmacy store = lele visit In - Patient Pharmacy store non meny pharmacistis was woorking there We show that junior pharmacistis was woorking there we show that junior pharmacist and seniaur phermacist carpe rate each other and incourage lach other. The pharmacy store was managed perfectly Nasicotic denge store by biometric must be locked when hot in use kys must be aviable to authorised members of staff. Pharmacy purchasing drug between by buyers Software. A Pharmacy purchasing drug between by buyers

Name & Signature of Student

Name & Signature of Supervisor Teacher

Pharmacy Incharge

Invitation

To request to come our college to interact with pharmacy students.



[Doctor Name]

Please contact JNVU Pharmacy in-charge whenever you feel like visiting the college to interact with the pharmacy students.

and the service of th

Dr.Anil Bhandari

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E-mail address: - bhandarianil87b@gmail.com,

ashwinsingh26061992@gmail.com



Department of Pharmacy

Ref: JNVU/PHARM/2021/483

TO,

Suprintendent Mathura Das Mathur Hospital (MDMH)

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing Guoup B to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

एसोसिवेट प्रोफैसर एवं विमागाध्यक्ष

नैफ्रोलोजी विभाग

एम.डी.एम. अस्पताल, जोधपुर

Kusum Chaudhary Santosh Choudhary Bhanwari Akash Choudhary Rahul Jakhar Ramdayal Sangwa धिकारी

ादास माथुर अस्पताल स. एन. मेडिकल कॉलेज

जोधपुर

Bhandes PHARM

Date: 24/12/21

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

No- Gren / 201/ 25438 dt 28/12/2

Forwarded to MOI/c Sub-Stare

for NIA.

ातास माम्यर विकित्सायय



Department of Pharmacy

Pharmacy practices

Date:- 01/02/2022 Name of student: - Akash, Bhanwari, Kusum, Rahul, Ramdayal, Santosh Class: - B. Pharm ITth Semester Name of hospital: - Mathura Das Mathur (MDM) Hospital Name of doctor and contact number and email address:-Dr. Surendra Singh Rathese (7073952222 Dr. Jagdish choudhary (9001706993) Senior Pharmacist Ganpat Parihar (9829670509) Report on Visit of Students from Guoup B (Akash, Bhanwari, Kusum, Rahul, Randaya Un 25 Dec 2021, we visited MDM Hospital to acknowledge ourselves with the working of a hospital pharmacy & understand the note of pharmacist & his responsibilities in a hospital After getting the permission to visit the hospital we schios pharmacist of the hospital, Mr. Ganpat anihal who helped us visit the hospital pharmacy & quide In the begining we made a visit to the hospital ware--house where drugs are stored. Here drugs are arranged in alphabetical order with heavier cantons e & lighter carton in upper case. n lower cas There is also an ice noom for storing drugs at 2 - 8° C & an AC noon for storing drugs at 8-25°C . All the expired & batch Wiled drugs are also kept here. All the drug cartons are labelled properly with its name, batch no., mg. date, exp. date,



with Dr. S. S. Rathoue & Dr. Jaglish Choudhary

quantity, packed date & supply. A newly neueved batch of any drug is also quarantined here. A small sample from the batch is send to Jaipur for testing & cleanance of the batch . If the sample fails in the quality testing another sample is send & if the second sample also does hat complies with the test then the batch is declared as unsafe & batch is failed. If the sample passes or complies with the test, the batch is cleaned & then distributed. Dungs from warehouse is distributed to substores & from substores to DDC, 2PD 2 OPD from where these are dispensed to patients. The whole process required a pharmacist in control. Thus a pharmacist has his notes & responsibilities in hospitals as 1. Storage of drugs & their maintenance 2. Sampling of drugs 3. selection of reliable suppliers & put forward the demand 4. Distribution & dispensing of drugs 5. Patient counselling 6. Maintain records etc. A phannacist is a link between the doctors, nurses & the patients. Shey are an important component of the healthcare. team - the ultimate goal of which is patient welfare. A pharmacist distributes drugs provides drug information, consultation & couselling to patients & to other health care professionals to meet their needs & compliance. Thus, assuring improved health care to mankind. In relation to medication, a pharmacist ensures that the right patient receives the 'sight' drug in a 'right' dose without any incompatibility In case of any medication error, the pharma--cist communicates with the prescribing physician without the knowledge of the patient. knowledge of the patient. At the end, we visited an IPD or In-Patient Department which provides medical care to patients admitted to the particular ward of the hospital & surgical equipments to the word staff. It deals with complete treatment & services provided to patient during his stay in the hospital. Here stocking & dispensing records are maintained in PGS &



with senior pharmacist MG anpart Pavilhare

Meaisters ... At the completion of our visit, we met Dr. S. S. Rathore (MD, Associate Professor) & Dr. Jagdish Choudhary (MO) of Nephrology ward who acknowledged in with renal failure & dialysis & transplant procedures. There are two wards in the Nephrology ward - one general ward where patients with signal injury or signal infection are admitted & other one the dialysis world where patients with complete renal failure and dialysed turice in a week. After dialyses the patient is injected with 4000 units of enythelapoietin. Transplant of kidney is not performed here, the main hub for transplantation is in Jaipur However, once a successful transplantation was & carried out. Preventive measures to keep our kidney's healthy are I drink water (31 / day) 2. manage blood sugar 2 blood pressure 3. reduce salt intake & maintain a healthy weig We are grateful to Dr. S.S. Rathore, Dr. Jagdish Choudhary & Mr. Ganpat Parihan for their valuable guidance & advice rendered to us at every stage. By this with we the knowledge & how hospital pharmacy. manage the use of medications in hospitals & other medical centers 2 how pharmacists play an important role in ensuring safety & efficacy of use of medicines.



Department of Pharmacy

Pharmacy practices

Date:- 28 12 2021 Name of student: - Bravcer, Madhav, Aaliya, Ayushi, Shewan Class:- B. Pharm VIst Semester Name of hospital: - Dr. Sarvepalli Radhakrishna Rajasthan Ayund university Name of doctor and contact number and email address:-Dr. Manisha Goyal (Assert Professor) - Rashestra and Bhaishajya Kalpang (Phenney) Report on Visit of Students from Group C Praveen, Madhan, Aaliga, Ayushi, Sherwan] College has organised an hospital visit for the Pharmany student for improving their practical knowledge and B. Pherm students to visit of Ayuruedic college and hospital 4 practically we want to see what is the role of pharmacy in Syuruedic hospital The visit started at morning 7: an along with a group of S students. We were reached at Dr. S. R. Rajasthan Ayurued university, Jodhpus was establised on 2003. After reach at principle, we had prime interection with Principle Prof. Dr. Gouind Sahay Shut, We asked him permission for college usited and he allowed us Dr. Manisha Goyal [Assist Croffessor] introduces by prima presentation with the detail of Ayurneda and also about the role of phaemery in Ayurnedic



MANESH

we had started Visit with Rashastra & Bhaishajya [Pharmary department] and we saw there that a lot of denices were engaged and she informed us about all these denices I told how cande drugs are prepared into drugs formulation with the help of these derives she also focused to giving information to the students about ayurueda preparetion and processes like "kejjali" Iblack sulfide of Mercury is a proparation which cither tritureting Parade (Mercury) with Grandheta [Sulfus] and she also explained about "Bharlang" is a The Next stage, we unsited to the pharmacy department Dr. Manisha Mans told us that this department is equipped with modern equipments like Electric Meeting Montle, Coating Machine, Cremuletor, Mass mixture, Siene mixture etc. and also classical Equipments are there like Baluka [classical heating Mantle] Yantie, Pute and Maha pute Vantra, and distillation apparetus [preparation of rose performes and rose weter]. and she also explained about Puta - It is a specific quatam of hest which is given to medicine which is converted in Bhasing form. Different types of dosages preparation are done by them such as Asang Asishta aiguid preparation , Valika, Crutika [tablets], Bhasma, Churna [powder drugs] And lates the Completed Ayusuedic daugs are stored in the store room and then supplied to these drugs in Ayururdie hospitel

finally, we visited to the Ayuruedic hospital There we met the hospital Nursing staff, his name Mr. Abhishekh dave and he informed us how Ayuruedic medicines are distributed, stored and preserved in the hospital. He told us that if any kind of drug of drug preparation is useful in the



hospital, the preparation of all these drugs is done in the pharmany departments. And all these actions. in the register files by the Nursing are contered. phermery and six told us that according to the medicines are doctor's prescription, some powdered weighed in the right quantity and after mixing all ase one dru 2.5. icines with triturate those med packed in paper or filled in bottle and given to the ugs ase given in the formulat and also many de urna, Paspati, Lau an of fluid, teblets Vati preparation of loha bhosmal This Ayusuedic hospital JPD facilities and all these are also has OPD an done mangged by Pharmacy Nursing staff After studing Ayuned in College & hospital, we come to know that the role of pharmacy is very important, between and Pharmaxognosy is a important basic science as well as Ayuruedic Pharmaceutical p. in despensing. System of Medicine which can be hel formulating, Manufacturine of dosage form endes **Pharmacy Incharge** Signature of

Supervisor Teacher

udent

- Date.
- PRN medication orders should specify the frequency of administration,

maximum daily dosage, and condition for which the medication is being administered.

There we also learnt about the communication skills because when a pharmacist takes on clinical roles like identifying and reviewing patient medication, providing medication counseling, offering information about medicine or an adverse drug reaction monitoring service, interpersonal communication skills are critical for effective practice.

DRUG INFORMATION SERVICES

Drug information service is a dedicated and specialized service provided by pharmacists to enhance knowledge of medicines use, promote rational prescribing among prescribers, and reduce medication errors.

DRUG DISTRIBUTION SYSTEMS

In DSRRAU hospital, it was observed that the procedure of drug distribution was categorized into two groups: a) Ambulatory/ Outpatient Services; b) Inpatient Services.

In DSRRAU hospital, For Inpatient the Drug Distribution was done by Complete floor stock system and unit dose dispensing system.

For routine dispensing of medicine for out – patient : Patient took their written prescription from physician, and gave it to pharmacist where it is dispensed. Pharmacists gives instruction to patient about dispensed medicine .

CONCLUSION

This hospital pharmacy training is a way of utilizing and implementing whatever knowledge gained during course . we learnt so many things and a different aspect of pharmacy.

JAI KISHAN Neha lynti Kartik

Name & Signature of Student

Stahnen Singhchon

Name & Signature of Supervisor Teacher

Pharmacy Incharge



Department of Pharmacy

TO,

Kanıla Nehry hespîtal pal link Road Shyau Magay Jodhpun

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing _______to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

fil Bhander. PHARMACY INCHAREGE

IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR

VISIT REPORT

A visit to HOSPITAL, Rajasthan is arrange for the students of D /B. Pharm of Jai Narain Vyas University Pharmacy College on November, 2021

The pharmacy students has to collect the following questionnaire details after going to the hospital;

- 1. The role of pharmacist in hospital:-
- 2. Responsibilities and functions of hospital pharmacist:-
- 3. Prescribed medication order and communication skills:-
- 4. Drug information services:-
- 5. Drug distribution systems:-
- 6. Inventory management:-
- 7. Medication errors:-
- 8. In the end, visit the In-Patient pharmacy store:-
- Details information about storage, purchasing and billing of drugs to patients and also collect information about precautions for storage of narcotic drugs.
- 10. Click picture with hospital management and doctor:-



Department of Pharmacy

Pharmacy practices

Date:- 4/12/2021 Name of student: - Deukaran, Prena, Sakshi, Mechakshi, Mantta, Suni Class:- Dophanung The yr Name of hospital:- Kamlg Akhrus Hospital Name of doctor and contact number and email address:-De Lugarde Gou 95301021444 0 goel sug 1@ gmail com Report on Visit of Students from..... Role of a phasemacist > The phasemacist should see ceive and handle prescription and give medicines to the partients with inporemation about medicines like health related issued of medicine and how to administerd the medicine on which time The pharma ciet should be able to manage the drug distribution system. Responsibilities and functions of hospital pharmacist => Hospital phasemacist are seeponseble pay monitoring the supply of all medicines used in the pospital. The hospital pharmacist should be able to dispense the prescrible medicines as per the Deurg & commetics Act and Rule. Hospital, pheremoraist function is that checking and maintaining of record of drug OR medicine. Hospital Phoremanist should knowledge about New OR moderim drug.

Prescreibed Medication and Communication Skills = . Phasemacist work in wegent and onergency medicine department awickly assurance clinical toual and in medicinez inposimation department. Communication skills of a pharmazict should be good phasimacist should to use easy language that patients and femily member under stand early to & good . Communication skills the pharemacist should good relation ship with partient & patient tamily member and good way of talking Pharmacist should give all the arguness which asked by patients & family member of pretient he should not aggreeseive. Drug information Services = Drug information services Charmacist and Other Lealth course Providing arganizations. The dung inposemation give by Medical Repuesentative (MR). The MR is direct contect & daily touch arith physician OR clinical phasemacist MR collect all the information of date of new drug & give details about it to clinical pharmacist OR physician and explain New doing information to physician O.B. clinical phasemarist & contince to about duig O.R. medicine.

Dung Distribution System - There are time types of dung distribution system. The doing distributed to partient in-marie (Indoor patient) like operation theater, x-ray and at which include in only in pospital. The dung are distributed to out patient which not include in pospital. They are not admited in hospital for large scale of popital the dung distribution by floor stock eystem in this different - different floor alferent - different pharmacy department.



Department of Pharmacy

Pharmacy practices

Date:- 29/12/21 Name of student:- Riya, Anam, Kaushik, Hammant, Arshin Manish Class:- B-Phaeum VIth Sein Name of hospital: - All India Institute of Medical Sciences Name of doctor and contact number and email address:-Report on Visit of Students from Jai Narain Vyas Unirecusity. AllMS chospital in Jodhpuer neas established in & operates cantonomously under the Ministery of Health & Family Welface. It is in medicinal college as meell as a medical research public university based in outskierts of city in Industrial Area Barni, Jodhpren Motto of the hospital is "Same Santu Nielamayah" voe translated as May All be Healthy. The possital doesn't encompasses a out - batient Sharmorey at the moment & the in - patient Lare wither perorided douge directly in reards on purchased by patients from Amerit Pharmacy. Amerit Phoennacy is a morel initiative of Ministery of Health & Family Welfare to provide affordable medicines & seliable implants for treatment. Pharmacentical products are sold



at discounts up to 60% of MRP in AMRIT phaemacies. Phaemacists in AIIMS majorily moverk to keep abundant medical supplies in hospital to not face shoedages. They also have the everpossibility of acquiring suitable tenders for deuige to be assed. The storage area consists of 4 sections -Consumables & medicine storage, Pathological & Biochemistery chemical storage, Zinens & small igadgets storage & heavy machinary storage. Consumables section has single usage eperoclucts. Medicines stored here are shelfed & marked & ethose details are used for their easy dispensing into meands. At convert, the hospital had 18,083 different molecules. Narcotice & other deugs prone to cabuse are stored behind a biometeric clock system with very dimited access. This section calso consists of a cold storage mint for the daugs to be sloved at cloved temperatures. Some other high end consumables like lenses, implants, stents are also stored behind locked doors for increased security The chemical storage section consists of ichemicals. & stains required during chistological & pathological studies Linens include recervything from com churnishings to doctor's & staff's clothing & this section calso has pourtable requipments for chiagnosis & dreatments. Deug distribution system is completely online. On receiving a request from weards in ohline mode,

the daugs are collected from marked shelrees & delireened to the meands meheneupon on a , the delireen is confirmed .count. subtracted decom inventory on eby pharmaciste in of fline mode disbatchod ky FEF (DD First esching, Fiers & Uni expiries match First in , First or is applied. The excoude & inventories care maintained under GER 154, 155 & 156. Puychasing byoress, tog

about 220% of molecules a is made & then uploaded ion COPP needsite leach indirer sual molecule is upon by nationa ernational. suppliers & many lacturers. The best conteract with extending to anyear 1 of supply is of men molecu les. during the the cycan, its made reia a tion of budget ceiling of 2.5 l puncha se under th About 1% of remaining purchases were ic equipment in modernized machinaen Specil thus felom especific suppliers mehich manufac equipmente comp tible. Imachinary. The further plans of clockansion include a for a staff socient oriented pharmacy made



Name & Signature of Student

Shrow Lingh (hou) Name & Signature of Supervisor Teacher

Pharmacy Incharge



Department of Pharmacy

ReFNO: JNVU/PHARM/2021/476

14/12/2021

TO,

Mathuea Das Mathue Hospital, shaster Nagar circle, jodhpur Pincede: 342001

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

1. Straitan a. YochESH. 3. Tiloir 4. Sarwan 5. Mangilal 6. Harish

fil Shandah.

PHARMACY INCHAREGE

JUNY, UNIVERSITY, JODHPUR





Department of Pharmacy

Pharmacy practices

Date:- 14/12/2021

Name of student: - Shaitan, logesh, sarwar, tilok, Harish, mangilal Class:- D. phasimacy 2nd year Name of hospital:- Mathuna Das Mathun Maspital Name of doctor and contact number and email address:-Report on Visit of Students from..... 1. THE Mole of Pharmacist in hospital? = pharmacists have become involved in medication management asthma and Chronic abstructive pulmonary discase HIV, and tuberculosis clinics. The phasmacist's state as a daug experit involves medication, reconcili--ation, management of darreg-related problems, and patient education A number of specialties in pharmacist. 2. Responsibilities and functions of hospital phanmacist ? Compoundind & dispensing for indoor & outdoor
 patient dipartment.
 Manufacture of pharmaceutical Ex: Tablet, Capsule, Qintment etc. · Propagation & stegilization of inject able medicine.

Filling & labeling & of medical Containens.
proper dispensing of naricatic medicine.
proper maintenance of records of naricatic medicine. 3. Prescribed medication Order and Communication. Skills:-1. Identify the required elements at a prescription 2: Review a prescription for Completeness and legality; identity incomplete an missing information 3. Differentiate between prescriptions and medication orders. 4. Produce an appropriate prescription label. 4 Dung Information Services:-This segurice is provided in response to the queries Sought by allied health Professionals in addressing medication -related problems pertaining to phasmacotherapy and medicine manggement issues of partients, one of the most impositant aspects of deryg Information is to be unbiased in its Contents. 5. Drug distribution System:-. Pharma coutical service in inpatient Department (202) · Location and loyaut · Floor stock system - outpatient services . Dispensing of Non-Charge floan stock drugs. Cost of the product forequency of use Quantity of use Effect on the hospital budget 6. Inventory management: We have seen how pharmacy inventory management has become even masse impositant in succent years.

It's also an essential part of a very successful pharmacy operation as keeping control of inventory levels has a major impact on bottom line costs and profit margins. 7. Medications ennous: the madication is in control of ---Any avant experience by any parson due to Notin TENT. aNal Duny Administration engran Underdose and everdose prescribing amission wrong time Improper dosing at C. 8. In the and visit the In-partient pharmacy store. In the end, the patient want to phase macy store and took the medicinas of phasemacist and would take all their internation, which one to take Complete the course of medicines 9. Petails information about storage purchasing and Lilling at drugs to patients and also collect information about precautions for storage of rancotic drugs Stability of Jengs depends on both environmental factors Such as tamposiature aier, light and humidity and drugrelated factors such as the active. Four axample, the use at expised antibacterials does not Curro an infaction and also favours the aneggance of resistant strains

Sheften, sarwan, Tilok mangilal, harish

Name & Signature of Student

Name & Signature of Supervisor Teacher

Al Blanderi

Pharmacy Incharge



Department of Pharmacy

TO,

AITAS Basni industrial Areq MIA 2nd Phese Jodhpur, 342005

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing <u><u>(THOUP</u></u> <u>B</u> to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

(Abraup B Idaju Bhagwati Loksh Abhishek

fif Bhander.

PHARMACY INCHAREGE IN-CHARGE, PHARMACY J.N.V. UNIVERSITY, JODHPUR



Department of Pharmacy

Pharmacy practices

Date:- 08/12/21

Class: - D. Phanm Ind year Name of hospital:- AIIMS Hospital, Basni, Jodhpur, 342005 Name of doctor and contact number and email address:-Seniar Pharmacist Mr. Ashok Bharge Sin Report on Visit of Students from Cnow B. (Kaju, Bhagweeti, Lokesh, Abhishek Last blednesday we visited AIIMS hospitel to see how al pharmacest works in hospital. These we get to know doles and responsibilities of a phermacist As for ATIMS hospital, there are two pharmacies one is OPD Pharmacy called Amerit Pharmacy Another is JPD Pharmaly called Central Store Aminit phanning was a phannacy controlled by central government they provide medicines to patients not for jue but at less prices. tox example - if any anticances drug costs 100007, they will provide at 15007 Pharmacist recruitment is controlled by central goverment there. It is only OPD (aut patient Department) it means they do not pravicle medicines to IPD (In-patient Department) pertient and OT (Openation Theatine).

Central Starre is the main pharmacy of AIINS They have bere 5 tores for stordage of druge. We met senior pharmacust My Mahok Bhaselver & He capterned that phasemacrist worker as bridge between patient and physician. Roles and Responsibilities of hospital tharmacist Forecast of Demand Forecest of Demand Distribution of medicaments in the words. Dispensing of medicaments to out-patients. Drug information source. (Let the physician thow about newly launched drugs) Selection of reliable suppliers. Patient councelling To ensure availability of the required medications ut cm afformabable cost at the required time. To maintain strict inventory of all items meceined and issued. lo counsel the patient medical staff , nurses, cend others involved in patient case in the use of drugs possible side effects, toxicity, advense effect , drug interaction etc. ak six said that they use CPMS (Centural Patient Management software) to fost second of 1 Menever they need drug they just meth mention O steo drug hame and steguisted quantity and their predex will be placed. the O Storage of Durly There were almost five big stores. All the drugs were arranged in At alphabetical orden und in racking system Morever they have mentioned drug's name on each Hack 0



business 2400 - we get will be in the third

Nerrechie Derregs are Storge of perce Narcofic drugs were Stored in leny .S manney - they have unstal for Aldo wage . Oply 9 f nreformard. JIN96 Stapp member allowed Ster Doeder daug They Use drugs in two. 0.40 categorales. HLP. Rate contriact) - almost 92 ...k.R. 1 0 drugs This category. Ih e ordered done by Local are Joursone & Joursones m , they have permanent suppliers They Mora different supplien BC. TROKED they Order spare surgerie they use , WIVI In case of TD) PHALN(every this .D. H.M. + theye Unever (.to.... 0n T p6 any emer Jul. In trauma surgery also they ...Meguerent are a ver V.C.M. Thing . DALOVICLR they n emergent. any Supplies In AJJMS hospited, they give bullDX)..... ... Every purchas Kaju Kai

Bhagwati Lokesh Abhishek

Name & Signature of Student

Name & Signature of Supervisor Teacher

Bhandes

Pharmacy Incharge

Invitation

To request to come our college to interact with pharmacy students.



[Doctor Name]

Please contact JNVU Pharmacy in-charge whenever you feel like visiting the college to interact with the pharmacy students.

Dr.Anil Bhandari

E-mail address: - bhandarianil87b@gmail.com,

ashwinsingh26061992@gmail.com



Department of Pharmacy

TO,

Satellite Hospital Rota, Jodhjung Rajas than

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing <u>Graup</u> 3 rd to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

Tyoti Vishakha

Rajy. Hi Bhander Nicharge, PHARM J.N.V. UNIVERSITY, JODHPUR

Al Bhender.

PHARMACY INCHAREGE J.N.V. UNIVERSITY, JODHPUR


Department of Pharmacy

Pharmacy practices

Date: - 3 Recember 2021

| Name of student: - Vishakha, Typli, Raju, Ranesh |
|--|
| Class:- Olharm Final year |
| Name of hospital:- Sate llite Kothital |
| Name of doctor and contact number and email address:- Phasmaidt - Laxman Lingh Rethore |
| Report on Visit of Students from |
| 13. Role of pharmaùsts is counsel patiente on dorge, possible side effects and risk associated with the each medicine and dispense prescription medications to patients, and ensuring their safety and efficacy. Financial management of drug pragets and teaching undergraduate and junior pharmacist |
| o). Responsibilities of the pharmanist are medice management in this pharmanist determine that which form of medication kest suits each patient and great source of advice for partients Function of pharmanist are proper maintename of seconds of nariostic medicine maintain a sufficient stock of nariostic medicine maintain a sufficient stock of anti dote for poisoning and emergency medicine maintainers of ploper system of all reformed. Scheiting and know sing the work of all |

3) Phasmaints work in urgent and emergency medicine departments quelity assurance clinical trials and in medicines information department, n communication point should be like have to talk with flights while handling filling high petient or attendant like deen't change the failal cyression while reading preserving tran, dan't laugh, etc. change the 4) pharmenists work in 3 server first looking after distribution second could arrange medicine from narket og por precurement Third looking after the secencing biling quality control issue They had a central an arrange the things in better usey. 5) Drug & were arranged in the alphabetical mannen og by the manufarturing blasis (company) They hade diggerent sections for equipments Big equipment is the capital goods because large amount of capital insected in it like MRI, CTScan, ultresound, These were hon - postable bleaue inventory 1110 huge that it may lien from i crore to scrore. They have robots In India, 4 robotic surgery graniable one of the finest and advanced system they had Johnson and Johnson Costing around 22 crore surgery which were very minute and very precising required they take help of robot like spine surgery. tome surgery are very lengthy of 10 to 12 hour so doiror take help of robot that surgery hes to be performed in very minute level.



7) sometimes doctors make mistakes while writing medication name dose to pharmanist had to talk with doltor common causes of medication essos include incorrect sting mostle prescribing esport dese mis calculations pools drug distribution plaitilly, drug and drug durie related problems, lack of patient education these methods to purchase anything 8) They were first red contact, second Local purchase system (Short tendering) third I and I for there serts red contact they pouse done the contract of year with company so there were non to slot tender everytime - 92% of total hipply is done by red contact 6%. is done by rotal purchase and 2%. by I and J. Contracter can divide the drug in 3 categories Fast morning , medium morning flour morning . Fast noving items like large isplane perentraly, tablet, caplule. They send 3 months medicine in advanced of part moising. > Red contract medicine all esundange fr renders. In local surplise the in long sticker is replaced by render; wheard 3) Narcotil drugs store by biometrie Drugs must be Locked ishen not use treys must be available to authoris members of Staff. use types of surgery '- tran ma and plant surgery In training they heintain large number of things less them 1.7. of cases in which emergent purchase In the plant surgery 98% all anything with filed In advanced the wist of items 3 days before operation give to phermenist. surve, consumable all the item we put together in advanced the operation theatre. (Lowmon singth Rather (Loumon sing the Rathour Vishakha Taki

Vishakha.

Name & Signature of Student

Ail Bhandel

Name & Signature of Supervisor Teacher **Pharmacy Incharge**

Invitation

To request to come our college to interact with pharmacy students.



[Doctor Name]

Please contact JNVU Pharmacy in-charge whenever you feel like visiting the college to interact with the pharmacy students.

Dr.Anil Bhandari

E-mail address: - bhandarianil87b@gmail.com, ashwinsingh26061992@gmail.com



Department of Pharmacy

TO,

MAHATMA GANDHI HOSPITAL, Olympic Road, Ratanada, Jodhpur

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing () Group to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

- 1. Nayan sour 2. Hoparam patel 3. Hitesh

- 4. Gopal 5. Manpheel singh

fil Bhander

PHARMACY INCHAREGE IN-CHARGE, PHARMACY J,N,V, UNIVERSITY, JODHPUR



Department of Pharmacy

Pharmacy practices

Date:- 30/11/2021

| Name of student:- Nayan soui, |
|---|
| Class:- Diploma - final (pharmacy) |
| Name of hospital: |
| Name of doctor and contact number and email address:- DE: Henny Pater (M.O. Bloud Bank M.G.H.) |
| Mob. NO 94 6102717 B homzy Patel 1992 @ gmail - com |
| Report on Visit of Students from JNVU PHARMACY |
| OTHE PH ROLE OF PHARMACIST IN A HOSPITAL IS TO DISPENSING OF MEDICATIONS DRUGS, FORMULATION AND REFORMULATION, DISTRIBUTION OF DRUGS, MANAGEMENT OF |
| DRUGI AND GUIDES THE PATIENT ABOUT CONSUMPTION OF DRUGS. ALSO, THE PHARMACIST IS HERE FOR IN-PATIENTS PRESCRIPTION AND MEDICATION. |
| (2) FUNCTIONS OF A PHARMACIST IN HOSPITAL "> TO GUIDE THE PATIENT ADDUT HOW TO TAKE THE DRUGG |
| DISPENSING MEDICATIONS MONITORING AND REPORTING DUG SAFETY. |
| TO KNOW THE HISTORY (MEDICAL) OF PATIENT. |
| RESPONSIBILITIES OF A PHARMAUST IN HOSPITAL. |
| TO LOOK ABOUT SAFETY FOR PATSENT TO PROVIDE ADVICE ON APPROPRIATE MEDICATIONS. |

| THE PHARMACIST THAT WE WICITED ALLO WIGHT OF DE |
|---|
| ROUND TO SEE THE PRESCRIPTIONS AND PATIENTS HEALTH. |
| O THE PRESCRIBED MEDICATIONI ARE MENACOTALITY |
| THE DOCTOR OF THAT HOSPITAL THAT SHOULD HAVE HOSPITAL |
| ARE FURTHER GUIDED BY PHARMACIST THAT HOW TO TAKE THE MEDICINES. |
| THE COMMUNICATION OF PHARMACIST WITH PATLENTS IS SMOOTH AND CALM. THEY COMMUNICATED IN DEPACTOR |
| LOCAL LANGUAGES WHICH IS EASILY UNDERSTANDABLE FOR PATIENTS. |
| (BASICALLY, THE DRUGS GIVEN BY A PHARMACIST IN A GOVT. HOLPITAL IC CAME OF NEW FORMULATION IN A GOVT. |
| CASE. BUT, IF THERE COMES ANY NEW DRUGS THAN FIRST OF ALL HE LOOKS AFTER THE USAGE OND STRUGS THAN FIRST |
| THROUGHOUT. AND THAN HE INTRODUCES THAT WITH SENIOR DOLTORS IN THERE SPHERE TIME WITH CATALOGUE OUR |
| SAMPLE PLECES. |
| THE MEDICINES SUPPLIED TO THE CENTRAL PRUG STORE |
| ACCORDING TO THERE TEMPERATURE THE DRUGS ARE CATEGORIZED TO CENTRAL DREG CTOPE AC ALL DRUGS SUPPLIED |
| HUGE VEHICLES. THE CENTRAL DRUG STORE CARRYS DRUG IN BULK QUANTITY. FURTHER AL DER NEED THE DRUG |
| LI SUPPLIED TO DRUG DISPENSING SECTION IN CART. AT LAST, THE DRUG IS DISTRIBUTED TO PATIENTS FROM THIS SECTION. |
| O THE SPECIFIC BLOCKS WERE CREATED FOR DRUGSO |
| ROUTINE WERE PLACED NEAREST. THE OTC' PRODUCTS |
| DRUGS WERE HIDED BY A CLOTH AT THE BACKSIDE IN |

A RACK.



отоке зисти настати. отоке зисти истати. отоке оснати окида статедана. отоке осла и лес сатедана. отоке тис окида посовета. истание тис окида посовета. истание текстора опосовет. отока и сетаки отока. отока и сетаки отока. отока и сетаки отока. отока отока истаки отока. отока отока истаки отока. отока отока отока.

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CECE BUT, THE DEVICE GOMEN MULTINE TO DAME OR MEN CECE BUT, DE THERE COMER OF ALL HE LOOPER AFTER THE



THE SHELVES WERE THERE TO REEP THE TABLETS & CAPSULES. THERE WAS ALSO A LIST OF INVENTORY MEDICINES IN WHICH DRUGS WERE DISTRIBUTED AS PER THERE DEMAND. O LACE OF CONCIOUSNELS AND CONCENTRATION CAN CAUSE MEDICATION ERRORO TO AVOID SUCH MILITAKES, PHARMACLIT GO TO WARDS OF NOSPITAL TO CH AND INTERACT WITH DOCTOR. AND, CHECK THE USED TO PATIENTS IN CASE ANY MEDICATION ERROR HAPPENI CERTAIN THAN TAKEN STERI EMERGENCY ARF OF NAR COTIC DRUGS -> (9) STORAGE THE NARCOTIC DRUGS ARE PLACED VERY DIFFERENTLY THERE IS A DIFFERENT CHAMBER OF NARCOTIC AND DRY PLACE. DRUGS ARE PLACED AT LOOL AND DRUGS ARE SENSITIVE (MORE) WAY FROM LIGHT. IT SHOULD BE 50 AWAY AND HUM10174. HEAT PURCHAIING AND BILLING OF DRUGIS -STORAGE PERWRITTEN BEFORE ALSO, THAT CERTAIN DRUGS ARE AS IN COOL TEMPERATURE AS PER THEIR NATURE AND KEPT SOME KEPT OUTSIDE OR NRUGI ARE OVER THE COUNTER. THE PURCHASING OF DRUG 11 DOHE AS PER DEMAND AND LUPPLY. THERE WAS NO ANY BILLING OF DRUGS LENT 10 PA IN GOUT. HOSPITAL. PDEB (PLarmacus) (Pharmacus) Phar (NAYAN SONI) (NAYAN SONI) Name & Signature of Name & Signature of

Student

Supervisor Teacher



Department of Pharmacy

TO,

ATTMS Basni Industrial Arreg MIA 2nd Phase, Jodhpur, 342005

SUBJECT: - Permission letter for pharmacy practice students in hospital visit.

Respected sir/ madam,

As per the PCI new curricular, a B / D Pharmacy student has to visit a hospital to understand the role of pharmacist in hospital and various aspect of hospital functionary.

Therefore we are deputing <u><u>GHOUP</u> E</u> to visit and interact with you and your prestigious hospital.

Kindly allow them and overview them various functionary of hospital and pharmacy.

Thank you

Ghandel PHAR HAREGE J.N.V. UNIVERSITY, JODHPUR



Department of Pharmacy

Pharmacy practices

Date:- 9/12/2021

Name of student: - Arvind Chouchary, Ankit Patel, Jeetendra, Chirag, Aashish Class:- D. Pharm IInd year. Name of hospital:- AILMS HOSPITAL Romi, Jedhpun 242005 Name of doctor and contact number and email address:-Mr. Ashok Bhargon (senior pharmacist) Report on Visit of Students from..... We have has going in Allow and meet to Semior pharmacist Ashak bhargar Sir ame that gives many times and discus about many alocate. To rade of pharmacist in the hospital. phaemacist distribute of drugs in hall hospital wareals, management of drugs, drug safty quality testing read pricatiption mel to give daug to medicine to patient. -> Propese dispensing at maxablic medicine -) Proper maintanace and recot record of maintanance of sufficient stock of antialde. for poissioning and emergeney medicine) Cheking of the quality of the source.

ot purchase of all medicine 2 maintanance of proper system of all seconds > Preprovion of periodic report, annual report and budget etc. > Distribute of drugs in coords > Allows in two store of drug Acresit pharmacy !- Amxit Opharemacy. worder by in central part. but its drug not a free of cost but prices is very lows. (OPD) 2.- Central drug store & Centra it this is called JPD (Im- patient Department) The central drug store of all drugs supply in Lospital. In this store two-three months advance stack avilable. + storage of drug: -) These were almost five big stores. All drugs were aronged in Plphabeticaly order and in packing system: They have mentioned drugs name on each pack The pharmacist communication with patient In and communication in afficial or local language and patient easily Dreug intermation service is didicated and Epecilized Service provideal by pharmacuit to enhence knowledge of medicine use and realyce medication errors



The phormagnit common with policy of the pol

Storage of Narcotic drugs:-Narcotte daugs Stored in mannese they biometric di ...Storage Statt member alloused to get them. -) and any drugs store tox.cel Coot Cold Storage area. (contral patient Managime =). hey Pms drugs. 9.000 Cm tor record of all coheneues they meed drugs they just mention change mame and required quantity good their crides. will be placed. of their medicines Come through cale 3 95%. Cantracts (R.C) meeticine ame of through and marclet .00.00. Space parts Contract with JIJ (Jonsahon f. Joneghon) expiringed draugs sent back to R.C. and Howinel Choudharu taxials 19201 12' Bhandee Rui, Amkit

Name & Signature of Student Name & Signature of Supervisor Teacher **Pharmacy Incharge**

Invitation

To request to come our college to interact with pharmacy students.



[Doctor Name]

Please contact JNVU Pharmacy in-charge whenever you feel like visiting the college to interact with the pharmacy students.

Dr.Anil Bhandari

E-mail address: - bhandarianil87b@gmail.com, ashwinsingh26061992@gmail.com

हैदराबाद विश्वविद्यालय

(संसद के अधिनियम द्वारा स्थापित एक केंद्रीय विश्वविद्यालय)

University of Hyderabad

(A Central University established by an Act of Parliament) गचिबोव्ली, हैदराबाद, तेलंगाना ५०० ०४६, भारत Gachibowli, Hyderabad, Telangana 500 046, India

डा. एम्. मुत्थामिलरसन सहायक आचार्य Dr. M. Muthamilarasan Assistant Professor

July 17, 2020

CERTIFICATE

This is to certify that Ms. Gauri Bhati from Jai Narayan Vyas University, Jodhpur, Rajasthan has successfully completed the INYAS-KARYA joint online training programme on 'Advanced Plant Biology and Biotechnology' June 22 - July 17, 2020 (four weeks).

The training programme comprised of the below:

- 1. Theory classes - 32 hours
- 2. Practical demonstrations
- 18 hours 3. Virtual field visits - 06 hours
- 4. Training in bioinformatics - 06 hours
- 5. Discussion on general topics 06 hours
- 6. Invited lecture
- 7. Interim evaluations
- 8. Final evaluation

Complete course content given overleaf

Gauri was punctual, attentive, and diligent throughout the programme, and her final report submitted to the undersigned qualifies him for the award of this certificate.

- 02 hours

- 03

- 01

(M. Muthamilarasan) Member, INYAS

Dr. M. MUTHAMILARASAN Assistant Professor Dept. of Plant Sciences School of Life Sciences University of Hyderabad Hyderabad-500 046, INDIA.

> Plant Molecular Genetics & Genomics Laboratory 🔳 Department of Plant Sciences, School of Life Sciences Tel.: 040 6679 4551 | E-mail: muthu@uohyd.ac.in



INYAS Internship - Schedule of Activities

| [June 22, 2020 to July 17, 2020 (Four weeks)] | | | | |
|---|-------|-----|---|--|
| | | | Morning session | (3.00 pm to 5.00 pm) |
| Week | Date | | (10.00 am to 12.00 noon) | Experimental field visit |
| | 22.06 | | Breeding for field crops - 1 | Lycia Pramitha |
| | | 1 | Lydia Pramimu TNALL Coimbatore, Tamil Nadu | INAU, Coimbotore, Tama Notor Natracorded |
| | | , i | https://youtu.be/952dDeuQX_M | Virtual lab visit & general intro |
| | Mon | | Next-generation sequencing | Roshan K Singh & Ashish Prasad |
| | 23.06 | | S. Tamilzhalagan | DBT-NIPGR, New Delhi |
| | | 2 | ICMR-NIRT, Chennal, Tamil Nado | NOLICESSALS |
| | Tue | | | Experimental field visit |
| | 24.06 | | Breeding for field clops | Neethu Francis |
| | | 3 | TNALL Combatore, Tamil Nadu | INAU, Combaliste, reason Not recorded |
| 1 | | | https://youtu.be/vrMUyQ/M2Y | Interim evaluation - I |
| | Wed | | KARYA: The way forward | i/c Sumi Rana |
| | 25.06 | | Prateek Dutt Rawal | Univ. of Hyderabad, Telangana Not recorded |
| | | 4 | Univ. of Rajasthan, Rajasthan https://youtu.be/29y9Asp4DGM | to the state of the |
| | Thur | | | Experimental field visit |
| | 26.06 | | Breeding for field crops | Jeeva Garleson TNALL Combatore, Tamil Nadu |
| | | 5 | Jeeva Ganeson Tamil Nadu | Not recorded |
| | | Ū | https://youtu.be/EQUIARUSIC | Sterilization & disinfection |
| - | Fri | | Gene, genetics & genomics | Roshan K Singh & Ashish Prasad |
| | 29.06 | | M. Muthamilarasan | DBT-NIPGR, New Delhi |
| | | 6 | Univ. of Hyderabad, Telangana | NONECOUS |
| | Mon | | https://youro.de/dakes.ja | in silico genomics |
| | 30.06 | - | In silico genomics | Subhalakshmi k |
| | 00.00 | 7 | Subhalakshmi K | https://youtu.be/DDBttNG805 |
| | | | IIIT-Hyderabad, reidingand https://youtu.be/2LWwsxdoNMk | PCR & gel electrophoresis |
| | Tue | | Constic transformation of plants - I | Roshan K Singh & Ashish Prasad |
| | 01.07 | | Rosban K Singh | DBT-NIPGR, New Delhi |
| 2 | | 8 | DBT-NIPGR, New Delhi | NOTICOUD |
| 2 | Wod | | https://youfu.be/grAsgasaries | Interim evaluation - II |
| | wed | | Small RNA biology | i/c Sumi Rana |
| | 02.07 | ~ | Namisha Sharma | Univ. of Hyderabda, Telangana Not recorded |
| | | Ŷ | DBT-NIPGR, New Deini https://youtu.be/Ex8pm83XD08 | a totation - I |
| | Thur | | million of game expression | Central Instrument Ashish Prasad |
| | 03.07 | | Regulation of gene capacity | DBT-NIPGR, New Delhi |
| | | 10 | DBT_NIPGR New Delhi | Not recorded |
| | | | https://youtu.be/42F3cxFITUA | Centrifugation |
| | H | | Engineering a bacterium | Jyoti Maurya |
| | 06.07 | | Jananee J | DBT-NIPGR, New Deirii Not recorded |
| | | 11 | IIT-Delhi, New Delhi https://youtu.be/DgN9KJaxS7U | manufactoring - practical |
| | Mon | | mips:///vee | In silico italisci pioni se |
| | 07.07 | | In silico franscriptoriale | IIIT-Hyderabad, Telangana |
| | | 12 | Subridious in the standard | https://youtu.be/zc2sv-oukov |
| | | | https://youtu.be/JaiGigGowok | Experimental part of cloning |
| · . | Tue | | Molecular cloning | Namisha Sharma |
| | 08.07 | | Namisha Sharma | DBT-NIPGR, New Deini Not recorded |
| | | 13 | DBT-NIPGR, New Delhi | in the sector and the |
| | Wed | | https://youto.oo/an | Interim evaluation - In |
| 3 - | 09.07 | | Stress proteomics | Ve sum Kund |
| | 57157 | 14 | Pooja R Aggaiwa | Not recorde |
| | | | https://youtu.be/0Nm0yXW1vs8 | Central Instrumentation - II |
| | Thur | | Cominiviruses | Roshan K Singh & Ashish Prasad |
| | 10.07 | | Ashish Prasad | DBT-NIPGR, New Delhi |
| | | 15 | DBT-NIPGR, New Delhi | Norrecore |
| | | | https://youtu.be/Fv5Hvv_ormes | Genetic transformation of pictus - in |
| _ | HI | | CRISPR/Cas9 for crop improvement | B. Rengasamy |
| | 11.07 | | Kutubuddin Ali Molla | DBT-NIPGR, New Dellin Not recorde |
| | | 16 | ICAR-NRRI, Odisha | arowth chamber |
| | Sat | | | Greennouse a growth hish Prasad |
| | 13.07 | | Recent advances in genomes | Rosnan N Singi & Realing |
| | | 17 | Sumi Rana | Not recorde |
| | | ., | Univ. of Hyderubud, Totalio https://youtu.be/cKswPxmy6-4 | in silico proteomics - practical |
| | Mon | | to alleg proteomics | subhalakshmi K |
| - | 14.07 | | In suice protectional | IIIT-Hyderabad, Telangana |
| | | 18 | ur Hyderabad, Telangana | https://youtu.be/PudeLHVdw/ |
| | | | https://youtu.be/PugeLHvdw/g | National Institutes & exams |
| | Tue | | Career in research and industry | Roshan K Singh & Ashish Prasad |
| | 15.07 | 10 | Rohit Khandelwal | DBT-NIPGR, New Delhi |
| | | 17 | IIT-Delhi, New Delhi | Final evaluation |
| _ | Wed | | Report submission | i/c Sumi Rana |
| | 16.07 | 20 | i/c Sumi Rana | Univ. of Hyderabad, Telanguru |
| | Thur | 20 | Univ. of Hyderabad, Telangana | |
| - | 17.07 | | N-ladictory Ceremony | 61 |
| | 17.07 | | Valeuciony containing | 11811 |

Course Coordinator



Scanned with CamScanner

1.3.4 Percentage of students undertaking field projects / research projects / internships (Data for the latest completed academic year)- PHARMACY

| PROGRAM | NAME OF THE STUDENT | PLACE OF INTERNSHIP | DURATION |
|-------------------|---------------------------|--------------------------|---------------|
| B. Pharmacy VI | Lovisha Sharma | Iscon Surgicals LTD., | 17.02.2022 to |
| Semester | | Jodhpur | 10.03.2022 |
| B. Pharmacy VI | Jyoti Saini | Iscon Surgicals LTD. , | 17.02.2022 to |
| Semester | | Jodhpur | 10.03.2022 |
| B. Pharmacy VI | Mamta Choudhary | Iscon Surgicals LTD. , | 17.02.2022 to |
| Semester | | Jodhpur | 10.03.2022 |
| B. Pharmacy VI | Deva Ram | Rudraya Health Care | 21.02.2022 to |
| Semester | | | 21.03.2022 |
| B. Pharmacy VI | Bhoma Ram | Rudraya Health Care | 21.02.2022 to |
| Semester | | | 21.03.2022 |
| B. Pharmacy VI | Mrityunjay Singh | Kirshna`s Herbal & | 16.02.2022 to |
| Semester | | Ayurveda | 18.03.2022 |
| B. Pharmacy VI | Jitendra Singh | Ayan Biotech | 15.02.2022 to |
| Semester | | | 13.03.2022 |
| B. Pharmacy VI | Shishpal Singh | Neelkanth Finechem LLP | 19.02.2022 to |
| Semester | | | 21.03.2022 |
| B. Pharmacy VI | Kartik Rajpurohit | Neelkanth Finechem LLP | 27.02.2022 to |
| Semester | | | 27.03.2022 |
| B. Pharmacy VI | Mukesh Kumar | Neelkanth Finechem LLP | 19.02.2022 to |
| Semester | | | 21.03.2022 |
| B. Pharmacy VI | Bhupendra Singh | Banaskantha Dist. Co-op. | 19.02.2022 to |
| Semester | | Milk Producer's Union | 19.03.2022 |
| | | LTD. Jodhpur | |
| B. Pharmacy VI | Ritik Mathur | Banaskantha Dist. Co-op. | 19.02.2022 to |
| Semester | | Milk Producer's Union | 19.03.2022 |
| | - • • • • • | LTD. Jodhpur | |
| B. Pharmacy VI | Dhirendra Kumar | swiss medicare Pvt. Ltd. | 16.02.2022 to |
| Semester | | | 14.03.2022 |
| B. Pharmacy VI | Mohammad Ikram | swiss medicare Pvt. Ltd. | 16.02.2022 to |
| Semester | | | 14.03.2022 |
| B. Pharmacy VI | Mahipal | Amneal Pharmaceuticals | 21.02.2022 to |
| Semester | | Pvt. Ltd. | 12.03.2022 |
| B. Pharmacy VI | Prakash Chandar | Amneal Pharmaceuticals | 21.02.2022 to |
| Semester | | Pvt. Ltd. | 12.03.2022 |
| B. Pharmacy VI | Bharat Devra | Amneal Pharmaceuticals | 21.02.2022 to |
| Semester | Charry an Cinch Carllea | PVt. Ltd. | 12.03.2022 |
| B. Pharmacy VI | Gnanveer Singh Sodha | Clinton Pharmaceuticais | 15.02.2022 to |
| Semester | Dhaairath Datal | Clinton Dhomesocution | 16.03.2022 |
| D. Plidillacy VI | Dilagiratri Pater | | 15.02.2022 to |
| B Dharmacy M | Doopak Suthar | Clinton Dharmassuticela | 10.03.2022 |
| D. FlidillidLy VI | реерак зиціаг | | 15.02.2022 10 |
| B Dharmaou VI | Dovon Makwana | Clinton Pharmacouticals | 15 02 2022 +- |
| Somostor | | | 16 03 2022 10 |
| B Dharmacy V/ | Sudarshan Jakhativa | Clinton Pharmacouticals | 15 02 2022 +0 |
| D. FIIdIIIIdLY VI | j Suuai siidii JakiiOliyd | Chillon Fliathaceuticals | 13.02.2022 10 |

| Semester | | | 16.03.2022 |
|----------------------|-----------------------|-------------------------|---------------|
| B. Pharmacy VI | Krishan Kumar Beniwal | Clinton Pharmaceuticals | 15.02.2022 to |
| Semester | | | 16.03.2022 |
| B. Pharmacy VI | Nehal Purohit | Ananta Medicare Limited | 14.02.2022 to |
| Semester | | | 04.03.2022 |
| B. Pharmacy VI | Vikas Bhati | Ananta Medicare Limited | 14.02.2022 to |
| Semester | | | 04.03.2022 |
| B. Pharmacy VI | Nitish Kumar Barola | Ananta Medicare Limited | 14.02.2022 to |
| Semester | | | 04.03.2022 |
| B. Pharmacy VI | Bhanu Pratap Singh | Ananta Medicare Limited | 14.02.2022 to |
| Semester | Rajawat | | 04.03.2022 |
| | | | |
| D. Pharma Final Year | Nayan Soni | Mahatma Gandhi | 31.11.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Gopa Ram | Mahatma Gandhi | 31.11.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Hitesh | Mahatma Gandhi | 31.11.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Gopal | Mahatma Gandhi | 31.11.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Manphool Singh | Mahatma Gandhi | 31.11.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Arvind | AIIMS Hospital, Basani, | 09.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Ankit | AIIMS Hospital, Basani, | 09.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Jitendra | AIIMS Hospital, Basani, | 09.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Chirag | AIIMS Hospital, Basani, | 09.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Aashish | AIIMS Hospital, Basani, | 09.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Vishakha | Satelite Hospital, | 03.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Joyti | Satelite Hospital, | 03.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Raju | Satelite Hospital, | 03.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Ranesh | Satelite Hospital, | 03.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Каји | AIIMS Hospital, Basani, | 08.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Bhagwati | AIIMS Hospital, Basani, | 08.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Lokesh | AIIMS Hospital, Basani, | 08.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Abhishek | AIIMS Hospital, Basani, | 08.12.2021 |
| | | Jodhpur | |
| D. Pharma Final Year | Shaitan | Mathura Das Mathur | 14.12.2021 |
| | | Hospital, Jodhpur | |

| D. Pharma Final Year | Yogesh | Mathura Das Mathur | 14.12.2021 |
|--------------------------|--------------|---|------------|
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Sarwan | Mathura Das Mathur Hospital, Jodhpur | 14.12.2021 |
| D Pharma Final Vear | Tilok | Mathura Das Mathur | 14 12 2021 |
| | THOK | Hospital, Jodhpur | 14.12.2021 |
| D. Pharma Final Year | Harish | Mathura Das Mathur | 14.12.2021 |
| | | Hospital, Jodhpur | |
| D. Pharma Final Year | Mangilal | Mathura Das Mathur | 14.12.2021 |
| | | Hospital, Jodhpur | |
| B. Pharma VI sem | Riya | AllMS Hospital, Basani, | 29.12.2021 |
| | , | Jodhpur | |
| B. Pharma VI sem | Anam | AllMS Hospital, Basani. | 29.12.2021 |
| | | Jodhpur | |
| B. Pharma VI sem | Kaushik | AllMS Hospital, Basani | 29.12.2021 |
| | | Iodhnur | 201222022 |
| B. Pharma VI sem | Hanumant | AllMS Hospital Basani | 29 12 2021 |
| | | Iodhnur | 29.12.2021 |
| B. Pharma \/I som | Arshi | AllMS Hospital Basani | 20 12 2021 |
| D. Flidillia vi Selli | | Iodhour | 23.12.2021 |
| P. Dharma \/l.com | Manich | AllMS Hospital Pasani | 20 12 2021 |
| D. Flidillid VI Selli | | Allwis Hospital, Basalli, | 29.12.2021 |
| D. Dharma \// com | Akach | Mathura Das Mathur | 01 02 2022 |
| B. Pharma vi sem | AKash | | 01.02.2022 |
| | Dhamuari | Hospital, Jouripur | 01 02 2022 |
| B. Pharma vi sem | Bhanwari | | 01.02.2022 |
| | Kusum | Hospital, Jounpur | 01 02 2022 |
| B. Pharma VI sem | Kusum | Mathura Das Mathur | 01.02.2022 |
| D. Discourse Million and | | Hospital, Jodnpur | 04 02 2022 |
| B. Pharma VI sem | Ranui | Mathura Das Mathur | 01.02.2022 |
| D. Dhamma \// aam | De re de vel | Hospital, Joanpur | 01 02 2022 |
| B. Pharma VI sem | Ramdayai | Mathura Das Mathur | 01.02.2022 |
| | | Hospital, Joanpur | 04.00.0000 |
| B. Pharma VI sem | Santosh | Mathura Das Mathur | 01.02.2022 |
| | - | Hospital, Jodhpur | |
| B. Pharma VI sem | Praveen | Dr. Sarvepalli Radhan | 28.12.2021 |
| | | Krishna, Rajasthan | |
| | | Aryuved University, | |
| | | Jodhpur | |
| B. Pharma VI sem | Madhav | Dr. Sarvepallı Radhan | 28.12.2021 |
| | | Krishna, Rajasthan | |
| | | Aryuved University, | |
| | | Jodhpur | |
| B. Pharma VI sem | Aaliya | Dr. Sarvepalli Radhan | 28.12.2021 |
| | | Krishna, Rajasthan | |
| | | Aryuved University, | |
| | | Jodhpur | |
| B. Pharma VI sem | Ayushi | Dr. Sarvepalli Radhan | 28.12.2021 |
| | | Krishna, Rajasthan | |
| | | Aryuved University, | |
| | | Jodhpur | |
| B. Pharma VI sem | Sharwan | Dr. Sarvepalli Radhan | 28.12.2021 |

| | | Krishna, Rajasthan Aryuved University, Jodhpur | |
|----------------------|------------|---|------------|
| B. Pharma VI sem | Neha | Dr. Sarvepallı Radhan Krishna, Rajasthan Aryuved University, Jodhpur | 16.02.2022 |
| B. Pharma VI sem | Kartik | Dr. Sarvepalli Radhan Krishna, Rajasthan Aryuved University, Jodhpur | 16.02.2022 |
| B. Pharma VI sem | Joyti | Dr. Sarvepalli Radhan Krishna, Rajasthan Aryuved University, Jodhpur | 16.02.2022 |
| B. Pharma VI sem | Jai Kishan | Dr. Sarvepalli Radhan Krishna, Rajasthan Aryuved University, Jodhpur | 16.02.2022 |
| D. Pharma Final Year | Devkaran | Kamla Nehru Hospital | 04.12.2021 |
| D. Pharma Final Year | Prena | Kamla Nehru Hospital | 04.12.2021 |
| D. Pharma Final Year | Sakshi | Kamla Nehru Hospital | 04.12.2021 |
| D. Pharma Final Year | Meenakshi | Kamla Nehru Hospital | 04.12.2021 |
| D. Pharma Final Year | Mamta | Kamla Nehru Hospital | 04.12.2021 |
| D. Pharma Final Year | Sunil | Kamla Nehru Hospital | 04.12.2021 |
| | | | |



JAI NARIN VYAS UNIVERSITY, JODHPUR (DEPARTMENT OF PSYCHOLOGY

Prof. Vimla Verma HEAD LANGUAGE WING, FACULTY OF ARTS New campus, Jodhpur- 342005. (Raj.)

No.JNVU/Psy/2021/

3rd January 2021

It is certify that M.A. Psychology students have Undertaken research projects during the time period June 2020 to December 2021. List of Students is being attached herewith.

ini

Pro. Vimla Verma

(Head) Professor & Head Department of Psychology I.N.V. University, Jodhpur 1.3.4 Number of students undertaking field projects / research projects / internships during the year

| Torrest | | List of students undertaking field | Link to the relevant document |
|-------------------|--------------|--|-------------------------------|
| Programme name | Program Code | projects / research projects / internships | |
| 1108.00 | | 2020 | |
| | | Aishwarya Saraswat | |
| M.A. PSYCHOLOGY | MAPSY | Bhagyshri Raipurohit | |
| M.A. PSYCHOLOGY | MAPSY | Bharat Kumar | |
| M.A. PSYCHOLOGY | MAPSY | Dakshita Gehlot | |
| M.A. PSYCHOLOGY | MAPSY | Dharmendra Choudhary | |
| | MAPSY | Lou y Mathur | |
| M.A. PSYCHOLOGY | MAPSY | ly oti Shekhawat | |
| M.A. PSYCHOLOGY | MAPSY | K husabu Bhati | |
| M.A. PSYCHOLOGY | MAPSY | Manisha | |
| M & PSYCHOLOGY | MAPSY | Nagma Khan | |
| M.A. PSYCHOLOGY | MAPSY | Napdini Vaishnay | |
| M & PSYCHOLOGY | MAPSY | Pagio Curior | |
| | MAPSY | Pooja Gurjar | |
| M.A. PSTCHOLOGY | MAPSY | Pooja Soni | |
| M.A. PSYCHOLOGY | MAPSY | Priyanka Meghwal | |
| M.A. PSYCHOLOGY | MARSY | Purva Singh | |
| M.A. PSYCHOLOGY | | Rakesh | |
| M.A. PSYCHOLOGY | MAPSY | Rekha Soni | |
| M.A. PSYCHOLOGY | MAPSY | Simran Vyas | |
| M.A. PSYCHOLOGY | MAPSY | Vendna | |
| M.A. PSYCHOLOGY | MAPSY | Villach Shorma | |
| M A PSYCHOLOGY | MAPSY | Vikash Sharina | |
| | MAPSY | Yamini Parmar | |
| M.A. PStchology | MAPSY | Zigyasa Soni | |
| M.A. PSYCHOLOGY | | 2021 | |
| | MAPSY | A Siddharatha | |
| M.A. PSYCHOLOGY | MADEX | Aditi Mehta | |
| M.A. PSYCHOLOGY | MAPST | Bhavini Bhati | |
| M.A. PSYCHOLOGY | MAPSY | layshree | |
| M.A. PSYCHOLOGY | MAPSY | K omal K anwar | |
| M.A. PSYCHOLOGY | MAPSY | Monish Mishra | |
| M.A. PSYCHOLOGY | MAPSY | | |
| M.A. PSYCHOLOGY | MAPSY | Muskan Sod | |
| M A PSYCHOLOGY | MAPSY | Omee | |
| | MAPSY | Swarupi Soni | |
| M.A. PStchologi | MAPSY | Vaishali Choudhary | |
| M.A. PSYCHOLOGY | MAPSY | Chitrangana Raje Rathore | |
| M.A. PSYCHOLOGY | MADSY | Anuradha Ramawat | |
| M.A. PSYCHOLOGY | MAPSI | Ambika Choudhary | |
| M.A. PSYCHOLOGY | MAPSY | Deepika Shekhawat | |
| M.A. PSYCHOLOGY | MAPSY | Khushboo loshi | |
| M.A. PSYCHOLOGY | MAPSY | Dakan Dhatt | |
| M.A. PSYCHOLOGY | MAPSY | Konan Bhau | |
| M.A. PSYCHOLOGY | MAPSY | Seema Rani | |
| M.A. PSYCHOLOGY | MAPSY | Shimpy Dwivedi | |
| | MAPSY | Suresh Kumar | |
| | MAPSY | Vikash Sharma | |
| IVI.A. PSTCHOLOGT | | | |