IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

(An Autonomous Institute affiliated to JNTUH, Hyderabad)
Dundigal, Hyderabad - 500 043

LABORATORY WORK SHEET

Name of the Student: MADKI SAI CHARAN

Class: CSM-C Semester: IST

Roll Number									
2	3	9	5	1	A	6	6	F	2

Course Code: AME002 Course Name: Manufacturing practice

Name of the Course Faculty: Mr. V. Mahidhar reddy Faculty ID: IARE 10333

Exercise Number: 10 Week Number: 10 Date: 08 December 2023

DAY TO DAY EVALUATION:

Marks	Aim / Preparation	Algorithm / Procedure	Source Code	Program Execution	Viva - Voce	Total
		Performance in the Lab	Calculations and Graphs	Results and Error Analysis		
Max. Marks	4	4	4	4	4	20
Obtained	4	4	4	4	4	20

Signature of Faculty

START WRITING FROM HERE :

Objective : Preparation of stepped pulley with pla material using the principle of 3D printing & additive manufacturing techniques as per drawing.

Resources : Manufacturing tools - 3D printa with attachments

Materials required : 3D Printing Machine. It is the construction of a 3-dimensional object from a CAD model or a digital 3D model. It is an additive manufacturing process in which a physical object is created from a digital design.

Equipment needed : Design software (CAT, A Solid work etc.) Cura Slicing software Elegoo - plus 3D printer.

ROLL NUMBER: 23951A66F2

General principle of 3D-printing:

1. Modeling: It takes virtual blue prints from modeling software such as computer aided design (CAD) and slices them into digital cross-section for the machine to successively uses as a guideline for printing.

2. Printing: To perform a print, the machine reads the design from an STC or OBL file and lays down successive design layers of material to build the model from a series of own section.

3. Finishing: After finishing the support are removed to get the finished components.

Procedure of 3D-printing:

A person creates a 3D image of an item using a CAD software program.

The CAD information is sent to the printer.

The prints forms the item depoting the material in layers starting from the layer on to a platform or laser some class light are used to harden the material.

Step-1: To create a 3D image of an item using a CAD or modelling software program and save it as STL or OBL formal file.

Step-2: In this STL or OBL file is sliced using cura software with required parameters and printfile is uploaded to 3D-printer for prioting or copied pendrive.

ROLL NUMBER: 23951A66F2

2.A) Initial testing of the 3D - printer :-

✓ push the filament to the bottom of print head.

✓ click prepare extrudent.

✓ click load then the temperature of nozzle will be automatically heated to 200°C.

✓ After the nozzle is preheated to 200°C, click the feed to extrude the filament from the nozzle.

✓ Clean the melted filament of the nozzle before printing.

2.B) After testing the printer :

✓ Insert the pendrive into USB drive port of the 3D-printer.

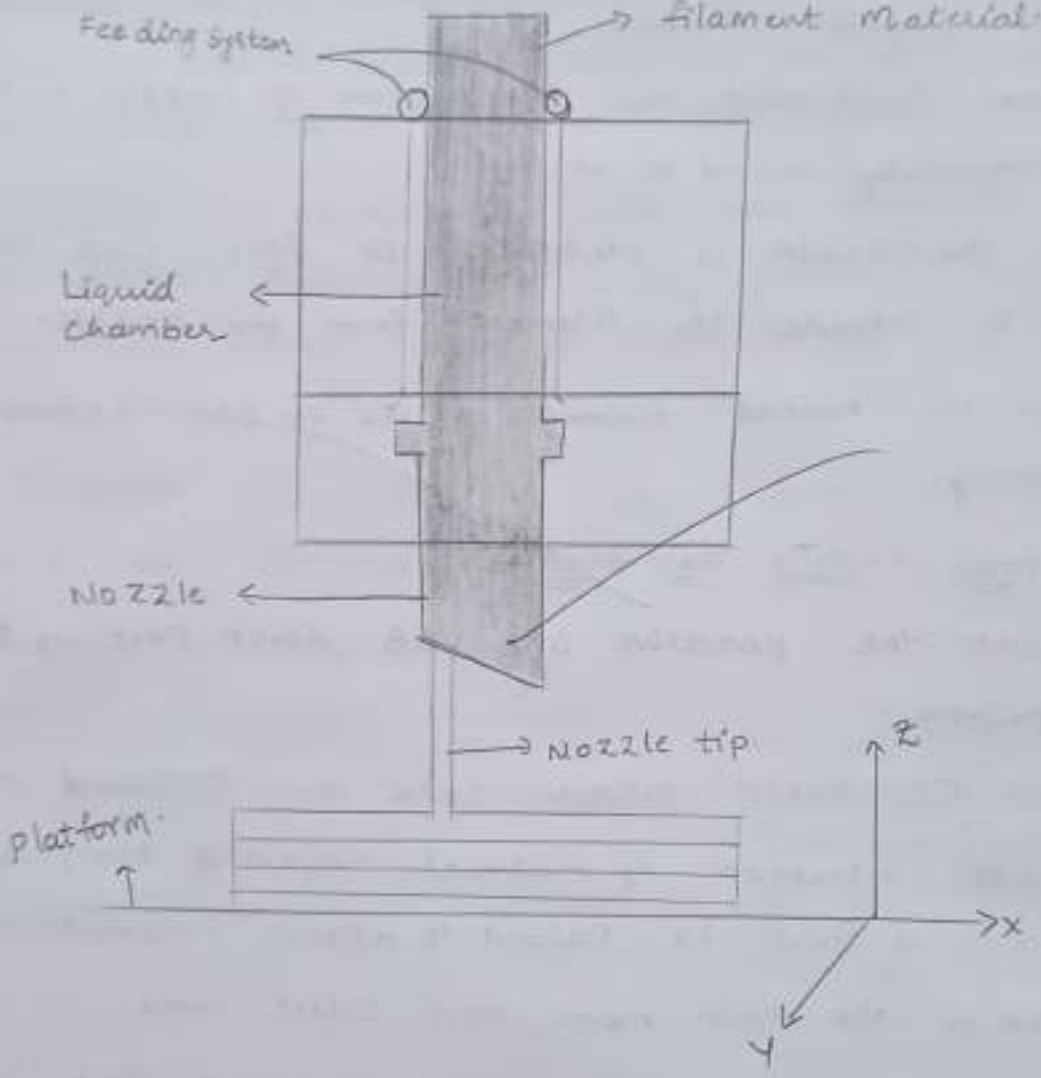
✓ click on main menu select the material as PLA ; on selection of material respective temperature of both of them is raised to aprest temperature.

✓ click on the main menu and select home.

✓ Then select the model folder and select the required model folder and select the required model and confirm model.

✓ when the nozzle and the heat reaches the present temperature x, y and z axes will return to zero, and starts printing.

Step - 3: After printing, the support are removed to get the finished component.



The PLA filament coire from spool passes through feeding system and is liquified. In liquified Chamber due to heat of the chamber and is extruded through nozzle tip a chamber and fine dia fibre of 0.2mm diamter through nozzle tipas a tin and material is deposited on the base layer by layer and together because the layers are in the molten state on the nozzle tip more upward until the finished product is obtained.

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Precautions :

1. Initial setting of level has to be done.
2. Do not expose the meter in a machine to direct Sunlight, excessive heat, open / naked flame, salty or corrosive gases, moisture or dust.
3. Do not put the pointer near devices that contain magnets or produce magnetic fields.
4. Do not connect to an Ac power outlet controlled by wall switches or automatic timers.

Result : The CATIA 3- dimensional modeled file. STL is uploaded to the slicing software to create model print file to 3D printer to print 3D object.