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Department of Mechanical Engineering

REPORT ON PROBLEM SOLVING METHOD -2023-24

DATE: 15-11-2023

NAME OF THE TOPIC: 3D Printing

CONDUCTED BY: Dr. Rayudu Peyyala

TARGET STUDENTS:

212G1A0317 222G5A0305 222G5A0308
222G5A0302 222G5A0307

REPORT:

3D printing, also known as additive manufacturing, is a technique that builds objects layer by layer from digital models. The process involves the following general steps:

Create a 3D Model:

Use computer-aided design (CAD) software to create a digital 3D model of the object you want to print. This model defines the geometry and structure of the final product.

Convert to STL Format:

Save the 3D model in STL (Standard Tessellation Language) format. STL files represent the surface geometry of a 3D object as a collection of triangles, making it suitable for 3D printing.

Slice the Model:

Use slicing software to divide the 3D model into thin horizontal layers. Each layer represents a cross-section of the object. The slicing software generates the instructions (G-code) that the 3D printer will follow to build the object layer by layer.

Choose Printing Material:

Select the appropriate printing material. Common materials include plastics (PLA, ABS), resins, metals, ceramics, and more. The choice of material depends on factors like the intended use, desired properties, and the capabilities of the 3D printer.

Set Printer Parameters:

Configure the 3D printer settings, including layer height, print speed, temperature, and support structures. These settings influence the quality and characteristics of the printed object.

Load Material and Start Printing:

Load the chosen printing material into the 3D printer. The printer heats the material and extrudes it layer by layer, following the instructions from the G-code. The build platform moves according to the design, and the material solidifies or cures, forming the final object.

Post-Processing:

After printing is complete, remove the object from the printer. Depending on the printing technology and material used, post-processing steps may be required. This can include removing support structures, smoothing surfaces, and applying finishes.

Quality Control:

Inspect the printed object for any defects or inconsistencies. Check dimensions and features to ensure they meet the design specifications.

PHOTOS RELATED TO THE PROGRAM:

HOD **PRINCIPAL**