



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2023**

Semester : Semester III - 2021

Course Code : MEC3002

Course Name : Sem III - MEC3002 - Introduction To Additive Manufacturing and Its Application

Program : B.Tech. Mechanical Engineering

Date : 11-JAN-2023

Time : 1.00PM -
4.00PM

Max Marks : 100

Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.

PART A

ANSWER ALL THE FIVE QUESTIONS

5 X 2 = 10M

1. What is Rapid Prototyping?
(CO1) [Knowledge]
2. List the Factors in Design for Additive Manufacturing.
(CO2) [Knowledge]
3. In Selection of parts Name the three decision elements.
(CO3) [Knowledge]
4. What is s-DSP ?
(CO4) [Knowledge]
5. What are the merits of product development?
(CO1) [Knowledge]

PART B

ANSWER ALL THE SIX QUESTIONS

6 X 10 = 60M

6. With a neat sketch Explain SterioLithiography Process in Additive Manufacturing.
(CO1) [Comprehension]

7. Explain Brief about part orientation and its advantages.
(CO2) [Comprehension]
8. Additive manufacturing (AM) has been used to produce complex parts usually in small batch sizes. Recently, AM has been gaining importance with the development of new production technologies encompassing a wider range of materials. These new technologies allow broader AM application in the industry, beyond traditional usage in rapid prototyping. As a result, the number of parts being produced by AM technologies has been increasing. In this scenario on what attributes AM technologies will be evaluated.
(CO3) [Comprehension]
9. The materials are usually coated with an adhesive layer that is heated by a feeding roller to melt the adhesive. In this way, each layer can be glued to the previous one to build up an object. A blade or laser is used to draw out the geometry of the object as well as cross hatching excess material to facilitate the removal of waste. Explain with neat diagram the manufacturing of Laminate using AM.
(CO4) [Comprehension]
10. In a Technology Strategy Board (TSB) fundend project for Virgin Atlantic, the arm holding the TV monitor in the airline's Upper class seats wanted to redesign using Additive manufacturing in this regard explain detailed process chain of AM?
(CO1) [Comprehension]
11. 3d printing has come a long way in recent years, and there are now many different post-processing techniques that can be used to achieve different results in 3d prints. In this regard explain any four techniques in improving 3d prints.
(CO3) [Comprehension]

PART C

ANSWER ALL THE TWO QUESTIONS

2 X 15 = 30M

12. Explain Manufacture of Caster wheels using metal AM process with suitable example
(CO3) [Application]
13. Explain New type of Products and new types of employment in Additive Manufacturing
(CO4) [Application]
