Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SET B

SCHOOL OF ENGINEERING
END TERM EXAMINATION – MAY / JUNE 2024

Semester : Semester VIII - 2020
Course Code : MEC3017
Course Name : CAD for Additive Manufacturing
Program : B.Tech.

Date : June 03, 2024
Time : 01.00pm - 04.00pm
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.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ANY FIVE QUESTIONS **5QX2M=10M**

1. List out the role of computer in design process?

(CO1) [Knowledge]

2. How does the geometric modelling fit into the modern design sequence?

(CO1) [Knowledge]

3. Give the classify the coordinate system used in Additive manufacturing system?

(CO1) [Knowledge]

4. Define Patch in surface modelling.

(CO3) [Knowledge]

5. Why do we require surface modelling?

(CO3) [Knowledge]

6. What do you mean by 'Topology' in solid modelling?

(CO4) [Knowledge]

7. What are the application and uses for solid representation.

(CO4) [Knowledge]

PART B

ANSWER ANY SIX QUESTIONS **6QX10M=60M**

8. In order to specify the geometry of a given solid, it is necessary to use a variety of coordinate system. Explain the classification of coordinate system with examples

(CO1) [Comprehension]

9. What are the objectives of CAD? Explain 'Generic' design process used in CAD design.

(CO1) [Comprehension]

10. What are ruled (lofted) surfaces? Explain the ruled surface by joining two space curves also give parametric representation of the form

(CO3) [Comprehension]

11. Write a short note on the B-spline surface. List out the advantages and disadvantages of surfacemodelling.

(CO3) [Comprehension]

12. When a space curve is rotated about an axis in space, we obtain the swept surface. Explain the surface of a revolution with an example.

(CO3) [Comprehension]

13. What is sweep representation in solid modelling? Explain the types of sweep representation

(CO4) [Comprehension]

14. Primitives are used in solid modelling in building models. With simple examples, explain the process of building a model by using primitives along with Boolean operation like union, intersection and differences on primitives

(CO4) [Comprehension]

15. With an example, explain the formation of Constructive Solid Geometry (CSG) tree. List out the advantages and limitations of CSG.

(CO4) [Comprehension]

PART C

ANSWER ANY TWO QUESTIONS **2QX15M=30M**

16. A square with corner coordinates P(2,2), Q(5,2) R (5,5) and S (2,5). Rotate the triangle by 45-degree anticlockwise direction. Obtain the new coordinates both in analytical as well as in homogenous matrix method. Show the output results in graph

(CO2) [Application]

17. Given a triangle with coordinates points A (4,4), B (6,4), and C (5,8). Apply the reflection on the y axis and obtain the new coordinates of the objects. Obtain the new coordinates of triangle in analytical and homogenous matrix method. Show the graphical representation of the reflection

(CO2) [Application]

18. Square given with coordinates points A (0,4), B (4,4) C (4,0) and D (0,0). Apply the translation with distance 2 towards X-axis and 2 towards Y-axis. Find out the new coordinates of the square using analytical and homogenous matrix methods. Show the output result in graph.

(CO2) [Application]