Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 53308

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fifth/Seventh/Tenth Semester

Mechanical Engineering

ME 6501 — COMPUTER AIDED DESIGN

(Common to B.E. Mechanical Engineering (Sandwich)/Manufacturing Engineering/ Mechatronics Engineering)

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are applications of computer aided design in mechanical engineering?

2. Classify the two dimensional geometric transformations.

3. Differentiate between analytical curves and approximated curves.

4. Generate the conical surface obtained by rotation of the line segment AB around the z-axis with, $A = (1, 0, 1)$ and $B = (7, 0, 7)$.

5. Write the significance of Gouraud shading.

6. List the importance of coloring of three dimensional objects in computer graphics.

7. Mention the importance of geometric tolerancing.

8. Define the following terms: (a) Interference fit (b) Running and sliding fit.

9. Compare the shape based and the product data based exchange standards.

10. What is the importance of standards in CAD?

PART B — (5 × 13 = 65 marks)

11. (a) Rotate the rectangle shown in Fig. 1, 30° counter clockwise about the line *EF* and find the new coordinates of the rectangle.

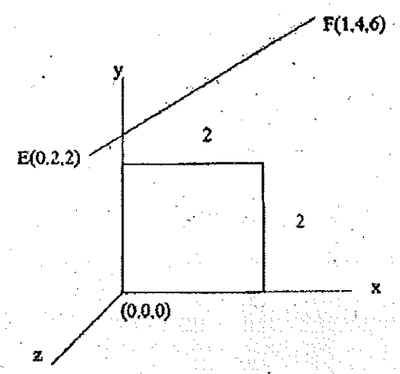

Fig. 1

Or

(b) Compare sequential engineering and concurrent engineering.

12. (a) What do you understand by Boundary representation (B-rep) technique of solid modeling? Explain briefly the data structure of B-rep solid model.

Or

(b) What are B-spline curve? Discuss its important properties.

13. (a) Briefly explain the user driven, procedural and data-driven animation techniques.

Or

(b) With a diagram, explain generic hidden line algorithm.

14. (a) Briefly explain the following traditional tolerance analysis methods with examples: (i) Worst-case analysis (ii) Root sum of squares.

Or

(b) Briefly explain the elements of a mechanism analysis.

15. (a) Explain the Initial Graphics Exchange Specification Methodology.

Or

(b) Write short notes on: Drawing Exchange Format (DXF) standard.

PART C — (1 × 15 = 15 marks)

16. (a) Summarize the three representation forms (Parametric, Implicit and Explicit) for plane curves, space curves and surfaces. Compare the three representations and write any three inferences.

Or

(b) Explain the following terms regarding CAD standards :

(i) GKS (5)

(ii) IGES (5)

(iii) STEP. (5)