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Question Paper Code : 10930

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Sixth/Seventh Semester

Mechanical Engineering

ME 8691 – COMPUTER AIDED DESIGN AND MANUFACTURING

(Common to : Mechatronics Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define product cycle.
2. What is called synthesis of design?
3. Write the equation of a circle in parametric form.
4. State the limitations of B-Spline curve.
5. What is the need for data exchange?
6. Compare PHIGS and IGES.
7. List the features of NC part programming.
8. Define sub-routine.
9. Define group technology.
10. List the components of FMS.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Explain the various two-dimensional display control facilities in computer graphics.

Or

- (b) List down the two-dimensional transformation matrix for the following transformation processes.

- (i) Translation (3)
- (ii) Scaling (3)
- (iii) Rotation (3)
- (iv) Shearing. (4)

12. (a) Derive the transformation matrix for a Hermite curve.

Or

- (b) What is surface modeling? Discuss in detail its types and applications.

13. (a) Describe the data exchange standard and development in the data exchange format.

Or

- (b) Infer the different levels of graphics standard communication and elaborate each of them.

14. (a) Explain the main difference between point to point and continuous path of numerically controlled machine tools, with a specific example.

Or

- (b) Explain in detail about Macros and give the programming structure in Macros.

15. (a) Explain with suitable sketches the various FMS layout configurations.

Or

- (b) Elucidate how Group Technology is used in designing manufacturing cells.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Analyze the use of the clipping algorithm. Explain any one of the line clipping algorithm in detail.

Or

- (b) Compare the hydraulic and pneumatic drives in CNC machining and evaluate the outcome.