

Dec.-22-0242

**ME-601 (Computer Aided Design and Manufacturing)
(CAD/CAM)**

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all. Selecting one question from each section A, B, C & D and all subparts of section E.

SECTION - A

1. (a) What are the primitive elements in CAD? Give the classification of geometric modeling systems based on their capabilities. (5)
- (b) Discuss the types of manufacturing systems in CIMS. (5)
2. (a) What is a wireframe model and discuss hidden line removal concept in it? (5)
- (b) Discuss any two types of Geometric Transformations using suitable 2-D examples. (5)

SECTION - B

3. (a) What is need of using synthetic curve in CAD software? Explain the parametric analytic curves for Circle or ellipse. (5)
- (b) What is inverse transformation? Derive the inverse transformation matrix for translation and rotation. (5)
4. (a) Explain B-spline surface with neat figure and state the advantage of this surface over Bezier surface. (5)

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- (b) What is transformation? Explain the term: translation, rotation, scaling and reflection. Write their transformation matrix also. (5)

SECTION - C

5. (a) Discuss the different types of Numerical Control Techniques and explain their significance. (5)
- (b) What are different types of statements used in APT language? (5)
6. (a) What are NC machine tools? Discuss features, basic components and co-ordinate system of NC machine tools. (5)
- (b) What are the various types of sweeps used in solid modeling? Explain with example. (5)

SECTION - D

7. What is a part family in Group Technology? Name three parts classification and coding systems commonly used in GT. Explain anyone of them in detail with the help of suitable examples. (10)
8. (a) Discuss the different types of CAPP systems available in the market based on retrieval and generative types CAPP. (5)
- (b) How the objectives of flexibility achieved by FMS? (5)

SECTION - E

9. Answer all the following:
 - (i) Define NC machining Centers.

[P.T.O.]

- (ii) State the advantages and limitations of wireframe modelling.
- (iii) What are the main modules, which a CAD/CAM system must have?
- (iv) What is the difference between Numerical Control and Adaptive Control?
- (v) Explain 3D transformation matrix for translation.
- (vi) List properties of good geometric model.
- (vii) Define Fixed and Floating Zero.
- (viii) States the different types of modeling in mechanical engineering field.
- (ix) What are the application areas of CAD?
- (x) Explain CIMS in terms of Flexibility. (10×2=20)