

[03 – 4211]

IV/IV B.E. DEGREE EXAMINATION.

Second Semester

Mechanical Engineering

COMPUTER AIDED DESIGN

(Common with Metallurgical Engineering)

(Effective from the admitted batch of 2006–2007)

Time : Three hours

Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Assume suitable missing data wherever necessary.

Answer to Question No. 1 must be at one place.

1. (a) What are the benefits of CAD?
- (b) What are the applications of computers for design?
- (c) What do you mean by composite transformations?
- (d) What are the applications of wire frame models?

- (e) What is the use of mesh generation in finite element analysis?
- (f) List the advantages of FEA.
- (g) What do you mean by post processor?
2. (a) Bring out clearly the difficulties a design engineer has to face at each of the design stages if they are carried out manually.
- (b) What are the types of plotters? Explain their working.
3. (a) What are the functions of an interactive graphic design workstation?
- (b) What is a digitizer? Explain how it can be used for transferring paper drawing to CAD system.
4. (a) The vertices of a triangle are situated at points (15, 30), (25, 35) and (5, 45). Find the coordinates of the vertices if the triangle is first rotated 100 counter clock wise direction about the origin and then scaled to twice its size.
- (b) Explain Cohen-Sutherland algorithm for clipping of lines.
5. (a) Derive the cubic spline equations.
- (b) Explain the Engineering applications of cubic splines.

6. (a) What are the limitations in utilizing the sweep method for geometric construction?
(b) Explain the basic curve fitting techniques.
7. (a) Develop an algorithm that can enable the user to create and manipulate boundary model by using set operations.
(b) Explain the basic elements used in finite element analysis.
8. (a) Explain how to analyze the cross sectional area, centroid of a mechanical element with an example.
(b) Explain the applications of artificial intelligence in CAD and CAM.

[2537/I/12]