M.E. First Semester (Mechanical Engineering) (CAD / CAM) (F.T.) (CBS)

13482 : Computer Aided Design : 1 MCC 1

P. Pages : 2

Time : Three Hours

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AX - 3457

Max. Marks : 80

Notes :
1. All question carry marks as indicated.
2. Answer **three** question from Section A and **three** question from Section B.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Discuss the benefits of computer Aided Design approach over the conventional design methodology. **7**

b) Explain the configuration of graphics workstation. **6**

2. a) Explain the co-ordinate systems used in CAD. **6**

b) Explain database structure for graphic modelling. **8**

3. a) What is Clipping? Explain Cohen Sutherland Clipping algorithm. **7**

b) Vectorize a line to be drawn from (10, 20) to (150, 125) mm on a display which is mapped to approximately (300×250 mm). The resolution of the screen is 640×480 pixels. **6**

4. a) Derive transformation matrix for rotation about an arbitrary point. **7**

b) Explain Bresenham's Algorithm for generation of circle. **6**

5. a) A square of side 10 units has lower to left corner at (10, 10). Calculate the new co-ordinates for the following : **9**

i) Scaling with reference to origin by scale factor of 2.

ii) Rotate by 30° about origin.

iii) Translate using Homogeneous in succession with above by – 3 units in x- direction and – 4 units in y – direction.

iv) Find the concatenate matrix for operation (i) and (ii) in succession and verify.

b) What is transformation? Explain its types. **4**

SECTION – B

6. a) What is feature based modeling? Explain steps in feature based modeling. **7**

b) What are the functions of a graphic package. **6**

7.	a)	What are Boolean operators? Discuss their effect on model construction.	7
	b)	What is customization of a graphics package? Explain.	7
8.	a)	What are analytical surfaces? Explain their types.	7
	b)	What is wire frame modeling? Discuss its advantages and limitations.	6
9.	a)	Explain IGES format for data exchange.	7
	b)	Explain the concept of automated drafting.	6
10.	a)	Discuss the capabilities of CATIA as a CAD software.	7
	b)	Differentiate between 'Solid Modeling' and 'Surface Modeling'.	6

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