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18MCM13

## First Semester M.Tech. Degree Examination, Dec.2019/Jan.2020 Computer Aided Design

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define a CAD system, and explain the fundamental reasons for implementing CAD system. (10 Marks)
- b. With the help of a block diagram, explain the application of computers to the design process. (10 Marks)

**OR**

- 2 a. Explain the software configuration of a graphics system. (10 Marks)
- b. Discuss the several aspects of constructing the geometry. (10 Marks)

### Module-2

- 3 a. Obtain the transformation matrix for the following 2D transformations of an object: (10 Marks)  
i) Scaling ii) Reflection iii) Rotation.
- b. A square (as shown in fig.3(b)) with an edge length of 10 units is located in the origin with one of the edges at an angle  $30^\circ$  with the +X-axis. Calculate the new position of the square if it is rotated about the Z-axis by an angle of  $30^\circ$  in the clockwise direction.

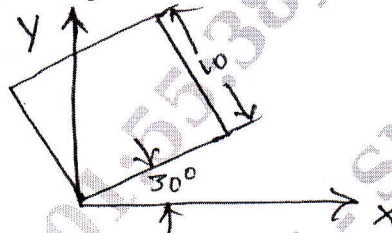


Fig.Q.3(b)

- c. Explain the following: (05 Marks)  
i) Concatenation of transformations.
- ii) Homogeneous representation. (05 Marks)

**OR**

- 4 a. What does geometric modeling mean? Give the properties to be desired of in any geometric modeling system. (10 Marks)
- b. Write a short notes on constraint based modeling. (10 Marks)

### Module-3

- 5 a. List the modeling facilities desired, and explain any two facilities in detail. (10 Marks)
- b. Discuss the details of the Graphical Kernel system. (10 Marks)

**OR**

- 6 a. Explain the important features of following other graphic standards: (10 Marks)  
i) GKS 3D ii) PHIGS iii) NAPLPS.
- b. Write short notes on drawing exchange format. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-4**

- 7 a. Give the implicit and parametric forms for the following: i) Line ii) Circle iii) Ellipse  
iv) Parabola v) Hyperbola. (10 Marks)
- b. Explain what is curve fitting, and discuss about the following curve fitting methods with necessary equations: i) Lagrange polynomial ii) B-splines. (10 Marks)

**OR**

- 8 a. Write short notes on surface representation methods. (10 Marks)
- b. Describe the ruled surfaces with necessary equations. (10 Marks)

**Module-5**

- 9 a. Describe Rapid Prototyping and give the classifications of rapid prototyping. (10 Marks)
- b. With the help of a neat block diagram, explain RP information work flow. (10 Marks)

**OR**

- 10 a. With a neat sketch, explain stereolithography process. (10 Marks)
- b. Explain fused deposition modeling with a neat sketch. (10 Marks)

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