

CBCS SCHEME



18MEA242

Second Semester M.Tech. Degree Examination, June/July 2019 Computer Applications in Design

Time: 3 hrs.

Max. Marks: 100

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

Module-1

1 With a neat sketch, explain the product life cycle and its components. (20 Marks)

OR

2 a. With a neat sketch, illustrate the process of vector graphics and Raster graphics. (10 Marks)

b. With a block diagram, illustrate and explain the components of CAD/CAM/CAE systems. (10 Marks)

Module-2

3 a. What are device drivers and graphics libraries? Explain. (10 Marks)

b. Explain the coordinate systems employed in graphic software. (10 Marks)

OR

4 a. Derive an expression for two dimensional rotation of an object with respect to an arbitrary point. (10 Marks)

b. Explain Z-buffer algorithm of hidden surface removal. (10 Marks)

Module-3

5 a. Write the integral formulas used in the calculation of volume, centroid, moment of inertia and product of inertia. (10 Marks)

b. Explain the following data structures used in graphics modeling:
i) Constructive solid geometry ii) Boundary representation. (10 Marks)

OR

6 a. Explain the mathematical representation of Hermite curve and Bezier curve. (10 Marks)

b. A circle of unit radius is centered at (0, 1, 1) and located on the yz plane. Derive the parametric equation of the circle by applying the proper transformation matrix to equation of circle defined in xy plane. (10 Marks)

Module-4

7 Write the expanded equation of a non-periodic B-spline curve of order 3 in polynomial form. Assume that the control points of the curve are P_0 , P_1 and P_2 . (20 Marks)

OR

8 a. What is non-uniform Rational B-spline curve? List its properties. (10 Marks)

b. Derive a NURBS representation of a half circle of radius 1 in the xy plane. Also determine its order, the co-ordinates are the control points and the knot value. (10 Marks)

Module-5

9 a. Explain the variant and generative approach using to develop a computer aided process plan. (10 Marks)

b. With a neat sketch explain briefly opitz coding system for part classification and coding. (10 Marks)

OR

10 a. What is group technology? List its objectives and advantages. (10 Marks)

b. Explain the classification and coding system employed in computer aided manufacturing process. (10 Marks)

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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.