

Code: 17MEMD1T4

**I M.Tech - I Semester – Regular / Supplementary Examinations
February 2020**

**GEOMETRIC MODELLING
(MACHINE DESIGN)**

Duration: 3 hours

Max. Marks: 60

Answer the following questions.

1. a) Highlight the importance of ‘Homogeneous matrix’ in 3D transformations. 8 M

b) Formulate the algebraic equation to develop the ‘Cubic spline’ with a neat sketch. 7 M

(OR)

2. a) Write a brief note on blending functions. 8 M

b) What is the significance of the ‘concatenation’ in transformations? 7 M

3. Define the ‘Bezier curve’, develop the matrix representation to construct the curve and highlight its characteristics. 15 M

(OR)

4. Develop the parametric equation of the 'B spline curve' with a focus on convex hull property and advantages. 15 M

5. a) Generate the parametric equation of the 'Ruled surface' and list the applications. 7 M

b) What is the importance of a 'Tabulated cylinder' in the specific applications of surface modeling? 8 M

(OR)

6. Develop the parametric representation of the 'B-spline surface', and highlight its advantages and applications. 15 M

7. a) Explore the method of 'Boundary representation' related to solid modelling. 8 M

b) Illustrate the importance of the 'Half space modeling' in solid modelling. 7 M

(OR)

8. Demonstrate the methodology for 'Tri-cubic solid' with considering a regular solid and highlight its advantages. 15 M