

SRI VIDYA COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
ME6501 COMPUTER AIDED DESIGN QUESTION BANK

UNIT – II

Part A

1. For a cubic Bezier curve, carry a similar matrix formulation to a cubic spline.
2. Derive the cubic spline equations.
3. Given a point Q and a parametric curve in the Cartesian space, find the closest point P on the curve to Q. Hint: Find P such that $(Q - P)$ is perpendicular to the tangent vector.
4. Explain the engineering application of cubic splines.
5. Derive the condition for C0 and C1 continuity in a cubic Bezier composite surface of two patches.
6. What are the types of surfaces that CAD/CAM systems use?
7. What is meant by Coon surface?
8. What do you understand by the form element method of geometric construction?
9. Specify the applications of this method of modeling in comparison to that of the variant type.
10. What are the limitations in utilizing the sweep method for geometric construction?
11. Distinguish between interpolation and approximation approaches used in design of curves.
12. Explain the basic curve fitting techniques.
13. Write on the importance of studying geometric modeling in CAD.
14. What are entities?
15. Explain the methods of defining lines, arcs and Circles in wire frame modeling?
16. Describe with the help of neat sketches the major surface entities provided by CAD/CAM systems.

17. How do you ensure convex hull property in Bezier surface?
- 18 Describe the effect of characteristic polyhedron over the resulting Bezier surface.
19. What do you mean by blending function? Explain reparametrisation of a surface.
20. What are the controlling points for generating curve

Part B

1. Write a note on:
 - i. NURBS
 - ii. B-splines.
2. Discuss the modeling guidelines to be followed by the user while constructing a surface model as a CAD/CAM system.
3. Differentiate between Bezier and B-spline surface with reference to number of control points, order of continuity and surface normal.
4. Explain how a Bezier curve is defined.
5. What are the advantages of Bezier curves over cubic spline.
6. Explain how the curves are represented in Generic form
7. Explain how the curves are represented in Parametric form.
8. Describe the effect of characteristic polyhedron over the resulting Bezier surface.
9. What do you mean by blending function? Explain rep of a surface.
10. Briefly explain CSG and B-Rep of solid modeling techniques