

**B.Tech. MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)**

Term-End Examination

December, 2015

BME-002 : COMPUTER AIDED DESIGN

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any seven questions. Use of calculator is allowed. Drawing of the diagram is **compulsory** wherever instructed in the numerical question.*

1. What are the different types of locating devices ?
Discuss and list their merits and demerits. 10

2. Write short notes on the following :
 - (a) Z- buffer algorithm 5
 - (b) Scan-line algorithm 5

3. Elaborate on parametric and non-parametric representation of curves. 10

4. Give the working procedure for fitting a straight line. 10

5. Find a Bezier curve equation. The coordinates of four points are given by

$$P_0 = [2 \ 2 \ 0]^T, P_1 = [2 \ 3 \ 0]^T,$$

$$P_2 = [3 \ 3 \ 0]^T \text{ and } P_3 = [3 \ 2 \ 0]^T.$$

Find the equation of the Bezier curve. Also find the points on the surface $U = 0, 0.25, 0.5, 0.75$ and 1.

10

6. (a) Discuss the construction and characteristics of B-splines.

5

- (b) Discuss the construction of Bezier curves.

5

7. Find the equation of the B-spline surface that covers the region R defined by line $Y = 1, Y = 2, X = 1$ and $X = 2$. Also find the surface vectors and its mid-point.

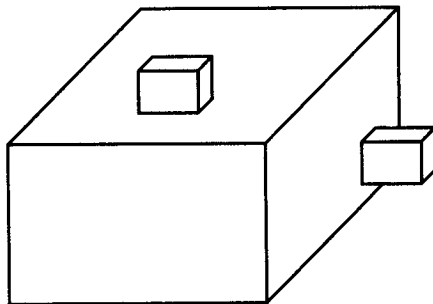
10

8. Find the minimum distance between a point in space and a plane.

10

9. (a) Validate the following solid model :

5



(b) Describe the various techniques used for solid modelling, with examples. 5

10. Explain the developments in CAD/CAM that demand Exchange Standards. 10
