Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

III SEMESTER B.TECH (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: COMPUTER AIDED DESIGN [AAE 253]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. Explain the role of computers in design process. **(05)**

1B. Differentiate between random and raster scan display. **(02)**

1C. Sketch and explain star LAN and Ring type modes of communication. **(03)**

2A. Explain DDA algorithm with flow chart. **(03)**

2B. Discuss and write Bresenham circle drawing algorithm. **(04)**

2C. Use Bresenham line drawing algorithm to draw the line segment joining (15, 10) to (20, 14). **(03)**

3A. Draw a circle using Bresenham circle algorithm with center C (0, 0) and radius r= 4. **(03)**

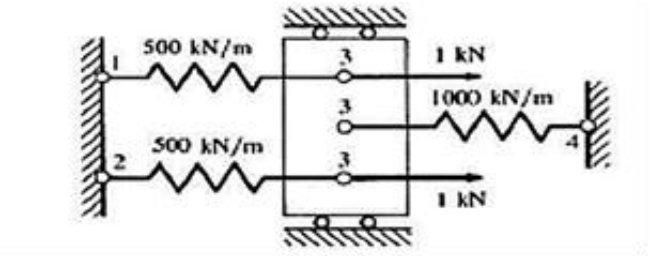
3B. Derive the expression for inclined ellipse. **(03)**

3C. Discuss and derive Bresenham line drawing algorithm. **(04)**

4A. Find the equation of a closed B-spline curve defined by four control points. Where n=3, the knot vector [u0 u1 u2 u3 u4] is the integers of [0 1 2 3 4] and the range of u is $0 \leq u \geq 4$. **(06)**

4B. Derive the expression for Hermite cubic curve. **(04)**

5A. For the bar assemblages shown in Figure, determine the nodal displacements, the forces in each element, and the reactions. Use the direct stiffness method for these problems. **(03)**



5B. A ruled surface is defined by 2 Bezier curves P_0 [3 5 9] ^{T}, P_1 [9 3 2] ^{T}, P_2 [2 8 3] ^{T} and the second curve is defined by P_3 [3 3 -3] ^{T}, P_4 [9 7 -4] ^{T}, P_5 [9 8 -1] ^{T} and P_6 [3 2 -1] ^{T}. Evaluate coordinate points at u=0.3 & v= 0.5. **(04)**

5C. Derive the stiffness matrix for bar element. **(03)**

6A. Derive the parametric expression for circle. **(03)**

6B. Derive the parametric expression for line. **(03)**

6C. Derive the parametric expression for parabola. **(04)**