

College of Engineering, Pune
Department of Mechanical Engineering
End Semester Examination
ME 402: CAD/CAM

Date: 23/11/2012

Time: 3 hours

Max. Marks 50

Instructions:

1. Attempt all the questions.
2. Figures to the right indicate full marks for a question
3. Use of handouts for G-codes and M-codes is allowed.

Q. 1.

A triangle with vertices A (32, 22), B (88, 20) and C (32, 82) is to be scaled by a factor of 0.6 about a point X (50, 42). Determine:

- (i) the composite transformation matrix and
- (ii) the coordinates of the vertices for the scaled triangle. 6

Q. 2.

For a Bezier surface determine the surface point, and the first derivative in both the u and w parametric directions for the parametric values $u = w = 0.7$. Bezier polygon vertices for the surface are:

(-15 0 15)	(-15 5 5)	(-15 5 -5)	(-15 0 -15)
(-5 5 15)	(-5 5 5)	(-5 5 -5)	(-5 5 -15)
(5 5 15)	(5 5 5)	(5 5 -5)	(5 5 -15)
(15 0 15)	(15 5 5)	(15 5 -5)	(15 0 -15)

10

Q. 3.

Use Euler's law to check the validity of boundary models of the following objects:

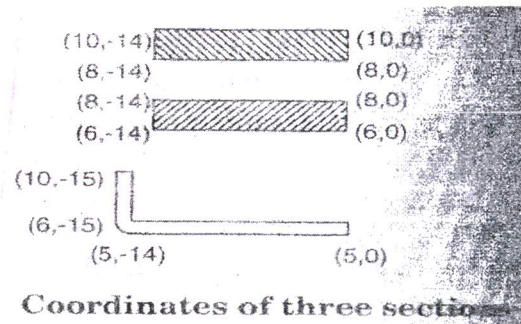
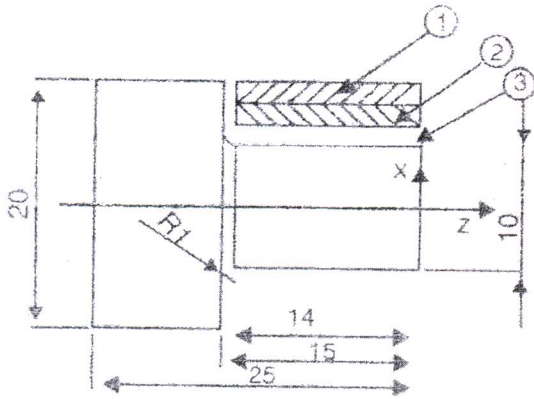
- (i) Cylinder
- (ii) Sphere 8

Q. 4.

(a) Describe different types of motion control systems used in NC system with their industrial applications.

6

Q. 4. (b). The figure shown below is to be generated in three steps: first two rough cuts with 2 mm depth of cut and the last cut with 1 mm depth of cut. Write a part program to generate this geometry. 10



Q.5. Write short notes on any two of the following: 10

- (i) Constructive Solid Geometry
- (ii) Types of manufacturing systems
- (iii) Advantages and disadvantages of Numerical Control System