

Total No. of Questions : 10]

SEAT No. :

P1955

[Total No. of Pages : 3

[5059]-532

**B.E. (Mechanical Engineering)
CAD/CAM AND AUTOMATION
(2012 Pattern) (End Semester)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q. No. 1 or Q. No. 2; Q. No. 3 or Q. No. 4; Q. No. 5 or Q. No. 6; Q. No. 7 or Q. No. 8; Q. No. 9 or Q. No. 10.*
- 2) *Figures to the right indicate full marks.*
- 3) *Use of Electronic pocket calculator is allowed.*
- 4) *Assume suitable data, if necessary.*

Q1) A triangle with vertices P (2, 2) Q (8, 2) and R (6,6) has undergone following transformation in sequence. **[10]**

- a) Rotation through 45° anticlockwise.
- b) Scaling by 2 times
- c) Reflection about x axis

Find the concatenated matrix and new coordinate of triangle.

OR

Q2) a) Explain Isometric Projections. **[4]**

b) Write a short note on Bezier surface with neat sketch. **[6]**

Q3) a) Compare CSG and B-rep technique of solid modeling with neat sketch. **[6]**

b) Explain penalty approach of solving FEM problem. **[4]**

OR

P.T.O.

Q4) An axial step bar is shown in figure 1. Determine deflection and stresses in element and reaction force. [10]

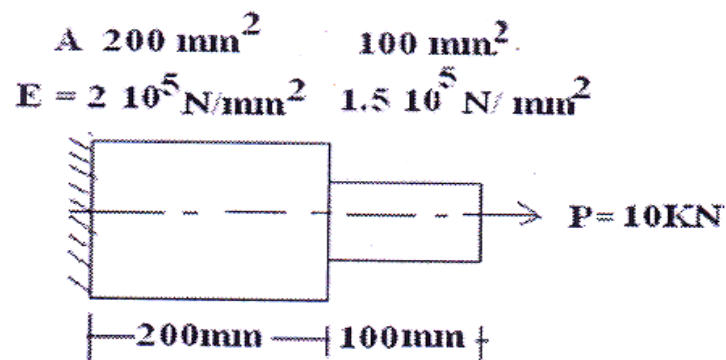


Figure 1

Q5) a) Explain the linear, circular CW and circular CCW interpolation with G code word address format for above interpolations. [6]

b) Write CNC part program for roughing and finishing using canned cycle for turned component as shown in figure. Assume Suitable cutting data. [12]

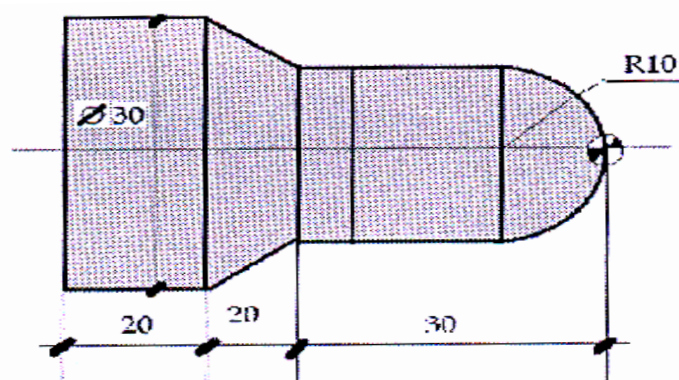


Figure 2

OR

Q6) a) Explain G28, G04, G40 and G41 code in part programming. [6]

b) Explain canned cycle for drilling and tapping in proper word address format. [6]

c) Explain the incremental and absolute method of program with G code. [6]

- Q7)** a) Classify various RP process. [6]
b) Explain 3-D printing process. [10]

OR

- Q8)** a) Explain Fused Deposition Modeling method of rapid prototyping with advantages and limitation. [12]
b) List application RP. [4]

- Q9)** a) Draw work envelope for Robot configuration. Explain the Spherical Configuration Robot with neat sketch. [10]
b) Explain Vacuum gripper with figure. [6]

OR

- Q10)** a) Explain the Group Technology layout in comparison to Process layout. [8]
b) Explain various Elements of FMS. [8]

