Total No. of Questions : 10]

SEAT No. :

P1854

[Total No. of Pages : 3

[4859]-1015

B.E. (Mechanical)

CAD / CAM AND AUTOMATION

(2012 Course) (Semester-I) (End Sem)

Time : 2.30 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers in one answer book.***
2) ***Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q. 7 or Q. 8, Q. 9 or Q. 10.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

Q1) a) Line A(5, 5) B(10, 15) is to be rotated about point B by 60° in CCW direct find the new position of point A and B of line. **[6]**

b) In concatenated transformation why translation matrix to be written in homogeneous form also write translation matrix in homogeneous form. **[4]**

OR

Q2) a) Explain Geometric translational and rotational mapping and its need. **[6]**

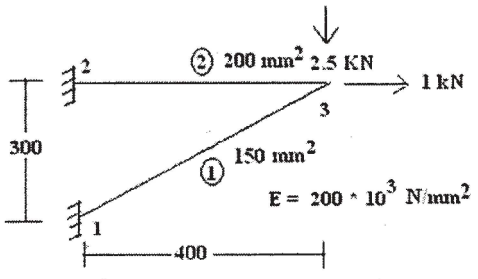
b) Explain Bezier synthetic curve. **[4]**

Q3) a) Explain CSG technique of solid modeling and its advantages and limitation. **[6]**

b) Explain the concept of shape function for 1–D element. **[4]**

OR

Q4) For the truss element shown in the figure find Global stiffness matrix and write in the form KQ = Γ. Compute nodal displacements. **[10]**

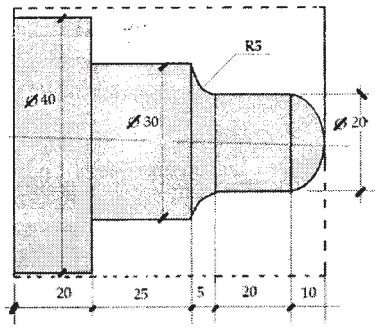


(All dimensions are in mm)

P.T.O.

Q5) a) Explain the canned cycle for Drilling, Boring and Tapping. **[8]**

b) Write CNC part program for roughing and finishing using canned cycle for turned component as shown in figure. Assume Suitable cutting data. **[10]**

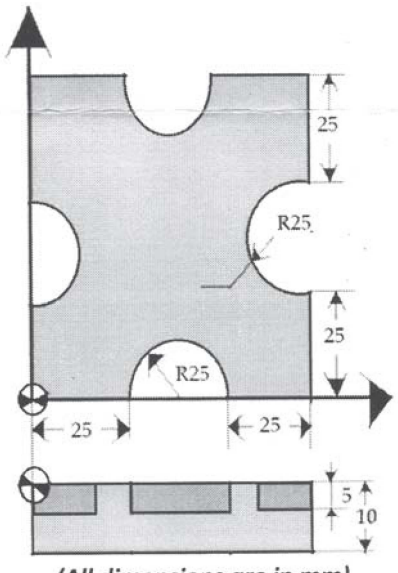


(All dimensions are in mm)

OR

Q6) a) Explain the concept of tool radius compensation while CNC programming and explain G codes and its format for cutter compensation. **[6]**

b) Write CNC part program for Milling and Drilling for component as shown in figure use concept of sub programming so that depth of cut per pass is 1 mm. Assume Suitable cutting data. **[12]**



(All dimensions are in mm)

Q7) a) Explain Rapid Prototyping (RP) systems in detail. List various RP techniques. Explain 3-D Printing with neat sketch. **[8]**

b) Explain Rapid Tooling in detail. List different Rapid Tooling methods. State benefits of them. **[8]**

OR

Q8) a) Write steps in *Fused Deposition Modeling (FDM)* with neat sketch. State its applications. **[8]**

b) Write steps in *Selective Laser Sintering method* with neat sketch. State its advantages. **[8]**

Q9) a) Classify robot on the basis of configuration and explain Articulated configuration of Robot with advantages limitation and applications. **[10]**

b) Explain various joints used in Robot. **[6]**

OR

Q10)a) Explain the FMS system with its relevance in present era of Flexible Automation. **[8]**

b) Explain Group Technology. Explain the optiz coding system. **[8]**

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