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**SUBJECT CODE NO: E-93**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(Mechanical) Examination Nov/Dec 2017**  
**CAD-CAM-CAE**  
**(REVISED)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i. Answer any three questions from each section
  - ii. Figures to the right indicate full marks
  - iii. Assume suitable data wherever necessary & state it clearly.
  - iv. Draw neat sketches wherever required.

**Section-A**

- Q.1 a. "The product life cycle starts with the customers and ends with the customers". 07  
Justify the above statement.
- b. Explain the difference between sequential Engineering approach and concurrent Engineering approach for product design. 06
- Q.2 a. What are ground rules for graphic software design? Explain them in brief. 07
- b. Explain feature based modelling with example. 06
- Q.3 A triangle  $\Delta ABC$  is given as its vertices A(2,2), B(8,4), and C(4,2), Express them in matrix notation and perform following transformations separately & show it on graph. 13
- i) Rotation about point C anticlockwise through an angle  $90^\circ$ , the axis of rotation is parallel to z-axis.
  - ii) Reflection through X-axis.
- Q.4 a. Explain the characteristics of B-spline curve. 07
- b. Explain following solid representation Techniques. 06
- a) Boundary representation technique
  - b) Constructive solid geometry techniques.
- Q.5 Write short note on following (any three). 14
- a. Concatenation.
  - b. Constraint based modeling.
  - c. CIM
  - d. I.G.E.S.
  - e. Display devices used in computers.

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Section-B

- Q.6 a. What is group Technology? Explain hierarchical type of coding system in detail. 07  
 b. Define FMS & explain its elements along with advantages & disadvantages. 06
- Q.7 a. Explain different drives used for N.C and C.N.C. machines. 07  
 b. Explain concept of absolute and incremental programming with example. 06
- Q.8 a. Explain the following terms with reference to a robot. 07  
 i) Accuracy  
 ii) Repeatability  
 iii) Work-volume  
 b. Explain the basic steps involved in analysis of a component using FEA Software. 06
- Q.9 A profile milling operation is to be performed to generate the outline of the part as shown in fig.1. 13  
 The part thickness is 20mm, cutter diameter 15mm and 800rpm, being the cutter speed. Write down the complete AAT programme.

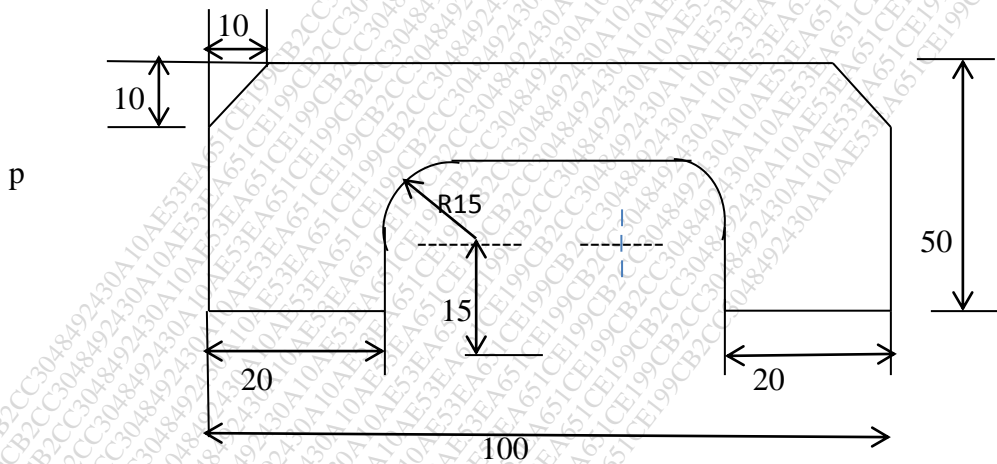


Fig.1

- Q.10 Write short notes on (any two) 14  
 a. Co-ordinate systems for N.C/C.N.C machines axis identification  
 b. Inverse kinematics in robots.  
 c. CAP.P.