



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fifth Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec. - 2019

CAD / CAM

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

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|---|----|--|----|
| 1 | a. | Discuss the role of computers in various fields of design and manufacturing. | 10 |
| | b. | Describe the output devices used in CAD and CAM applications. | 10 |
| 2 | a. | With the help of a block diagram, explain the product cycle in computerized manufacturing environment. | 10 |
| | b. | Explain the advantages of CAD and CAM. | 10 |

UNIT - II

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|---|----|--|----|
| 3 | a. | Discuss the functions of graphics software. | 10 |
| | b. | Give the classification of surfaces used in geometric modeling. Also compare Bezier curve and B-splines for CAD application. | 10 |
| 4 | a. | A triangle is defined in a 2-D ICG system by its vertices (0, 2) (0, 3) and (1, 2) perform the following transformations on this triangle and give the graphical representation for each transformation: | 10 |
| | | i) Translate triangle in space by 2 units in the x-direction and 5 units in the y-direction. | 10 |
| | | ii) Scale the original triangle by a factor 1.5 | |
| | | iii) Rotate the original triangle by 45°(CCW) about the origin | |
| | b. | Describe IGES. | 10 |

UNIT - III

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|---|----|---|----|
| 5 | a. | With a neat sketch, explain basic components of NC systems. Also list the advantages and limitations of NC. | 10 |
| | b. | Explain the NC procedure. | 10 |
| 6 | a. | Give a brief description of CNC machining centre. | 6 |
| | b. | Explain briefly three basic types of motion control system. | 9 |
| | c. | Write a note on high speed machining. | 5 |

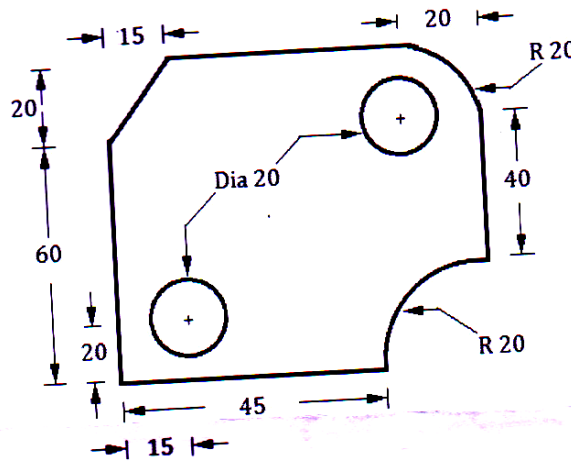
UNIT - IV

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|---|----|---|---|
| 7 | a. | Discuss the requirements of structure in the case of CNC machine tools. | 6 |
| | b. | With neat sketch, explain optical rotary encoders. | 8 |
| | c. | With neat sketch, discuss the presetting for machining centre tooling. | 6 |

- 8 a. Briefly describe about the feed drives used CNC machine tools. 8
- b. Explain the work holding methods suitable for CNC machining centers. 6
- c. With neat sketch, explain spindle design for CNC turning centre. 6

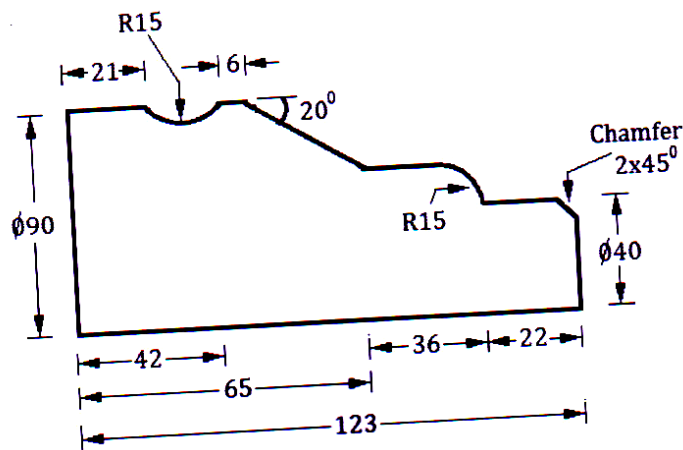
UNIT - V

- 9 a. Write the significance of the following ISO codes G80, G43, G91, and M02. 4
- b. Develop a CNC program using ISO codes for drilling canned cycle and milling of the component shown in Fig.9 (b). Assume suitable data for spindle speed, feed and depth of cut 16



Q. No. 9(b) - Figure. 9(b)

- 10 a. Write a CNC turning program (rough and finish cycles) using canned cycle for the component as shown in Fig.10 (a). Assume suitable data for spindle speed feed and depth of cut. Prepare process chart. 14



- b. What do you understand by cutter radius compensations? Explain with sketches. 6

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