



## 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

- |      |   |    |
|------|---|----|
| 1 a. | Explain general design process with the help of a block diagram.                    | 10 |
| b.   | List and explain at least ten benefits of CAD.                                      | 10 |
| 2 a. | Explain with neat sketches two basic techniques for generating image on CRT screen. | 10 |
| b.   | Explain the working principle of the following with neat sketches:                  |    |
| i)   | Joystick  |    |
| ii)  | Tracker ball  | 10 |
| iii) | Flat bed X-Y plotter  |    |
| iv)  | Laser printer   |    |

### UNIT - II

- |      |   |    |
|------|---|----|
| 3 a. | With a neat block diagram, explain software configuration of a graphics system.                   | 10 |
| b.   | Consider a point defined by (3, 1). Scale the line by factor of 2 and rotate about origin by 45°. |    |
| i)   | Perform sequential transformation   |    |
| ii)  | Perform Concatenated transformation   | 10 |
| iii) | Give analysis of results  |    |
| 4 a. | Explain with a sketch, database exchange using IGES model.  | 10 |
| b.   | Explain the features of following with sketches:  |    |
| i)   | Wireframe Model   |    |
| ii)  | Solid Model   | 10 |
| iii) | Bezier Surface  |    |
| iv)  | B-spline Surface  |    |

### UNIT - III

- |      |  |    |
|------|--|----|
| 5 a. | Explain steps to be followed for utilizing numerical control in manufacturing.       | 10 |
| b.   | Explain with neat sketches, NC coordinate system for milling and turning operations. | 10 |
| 6 a. | Explain principle functions of CNC.  | 10 |
| b.   | Explain; i) Vertical machining centre    ii) Turn-mill centre.                       | 10 |

### UNIT - IV

- |      |   |    |
|------|---|----|
| 7 a. | Briefly describe any four types of electric drives used in CNC Machine tools.         | 10 |
| b.   | Give a brief description of linear motion elements used in CNC machine tool slides.   | 10 |
| 8 a. | Briefly describe any four types of cutting- tool materials used in CNC machine tools. | 10 |
| b.   | Briefly explain ISO coding system for carbide inserts used in turning.                | 10 |

UNIT - V

- 9 a. Explain briefly different NC words used in NC programming. 10
- b. Write a part program to obtain five holes by drilling operation on the component shown in Fig. Q9(b). Component thickness = 50 mm. Take drill diameter 8 mm. Consider lower left corner as program zero and use absolute dimensioning. Assume all other data suitably. State meaning of each NC block.

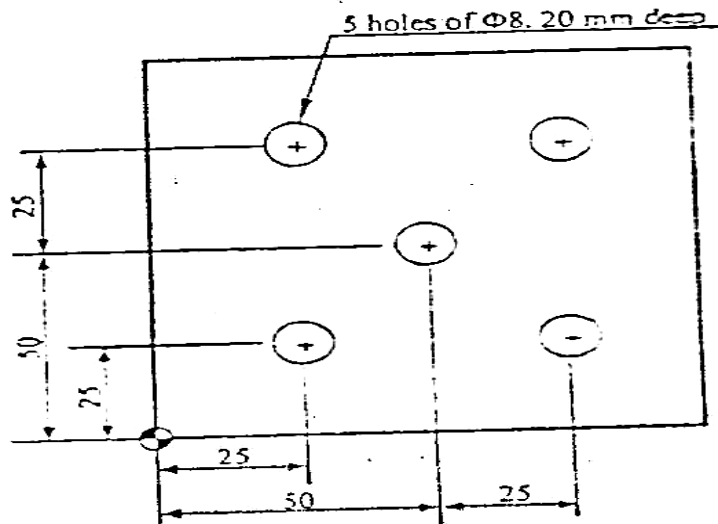


Fig Q 9(b)

- 10 a. Explain the following: 10
- i) Cutter radius compensation
  - ii) Tool length compensation
  - iii) Canned cycles
  - iv) Dwell in part program
- b. Write a part program to perform contour slotting (milling) operation on the component shown in Fig.10(b). Consider lower left corner of the billet as program zero. And use absolute dimensioning. Assume all other data suitably. State meaning of each block.

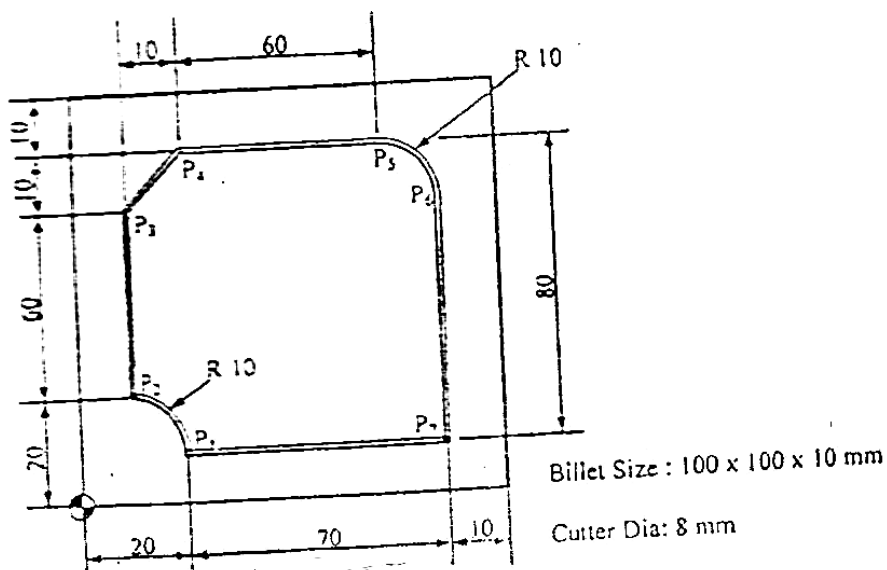


Fig. Q 10(b)