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

(An Autonomous Institution affiliated to VTU, Belgaum)

**Sixth Semester, B.E. - Automobile Engineering**

**Semester End Examination; June/July - 2015**

**CAD/CAM/CAE**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: i) Answer any FIVE full questions, selecting at least TWO full questions from each part.  
ii) Draw sketches where ever necessary with pencil.*

### PART - A

- |   |    |
|---|----|
| 1. a. Discuss the role of computers in manufacturing.                               | 6  |
| b. Explain briefly stroke writing and raster scan technique used to generate image. | 6  |
| c. Briefly explain different input devices used for CAD activity.                   | 8  |
| 2. a. Explain briefly the functions of graphic package.                             | 6  |
| b. Explain briefly the 3D transformation matrices.                                  | 6  |
| c. Explain briefly the features of STEP.  | 8  |
| 3. a. Explain briefly pre processing and post processing in FEA.                    | 10 |
| b. Explain briefly different types of elements used in FEM.                         | 10 |
| 4. a. Differentiate NC, CNC and DNC systems.  | 6  |
| b. Discuss the elements of NC systems.  | 6  |
| c. Discuss the functions of computer in DNC system.                                 | 8  |

### PART - B

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|---|----|
| 5. a. Explain with sketch milling tooling system.   | 8  |
| b. Explain the working of double gripper tool changer with sketch.  | 8  |
| c. Discuss the features of high speed machine tools.  | 4  |
| 6. a. Explain the features of CNC turning center briefly.   | 8  |
| b. Explain the fundamental steps involved in part programming.  | 8  |
| c. Explain the axis system for milling and turning.   | 4  |
| 7. a. Explain any six 'g' codes and 'm' codes.  | 6  |
| b. Write an NC program for the component shown in Fig 7-b. Tool is at height of 20 mm above upper surface of job. | 14 |

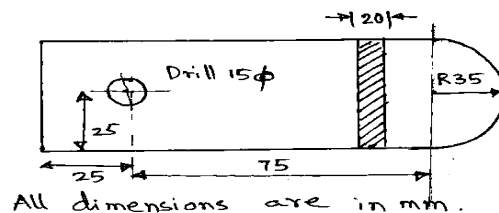


Fig 7-b.

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|---|---|
| 8. a. Explain with neat sketch the robot configurations.        | 8 |
| b. Briefly explain work cell control.                           | 6 |
| c. Discuss the applications of robot in various fields briefly. | 6 |

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