

**F 3052**

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Fifth Semester**

Branch : Mechanical Engineering/Automobile Engineering

AU 010 502 }  
ME 010 502 } COMPUTER AIDED DESIGN AND MANUFACTURING (AU, ME)

(Regular—New Scheme)

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

**Part A**

*Each question carries 3 marks.*

1. Define computer integrated manufacturing.
2. Differentiate between Incremental and Absolute systems.
3. List any *five* geometric commands in APT.
4. What are the advantages of CAPP ?
5. What is the function of a robot end effector ?

(5 × 3 = 15 marks)

**Part B**

*Each question carries 5 marks.*

6. Discuss the various storage devices used in CAD.
7. Explain the practical application of straight-cut NC system.
8. Discuss the main aspects of word address format in NC.
9. What are the elements of responsive manufacturing ? Explain.
10. What are the challenges in application of a robot for welding ?

(5 × 5 = 25 marks)

**Part C**

*Answer either (a) or (b) section from each module.*

*Each full question carries 12 marks.*

**Module I**

11. (a) Discuss a scheme for networking an integrated CAD/CAM system used in a foundry shop and machine shop.

*Or*

- (b) Describe all the 2D transformation operations used in CAD.

Turn over

## Module II

12. (a) Discuss all the steps in an engineering design process. What is the effect of using computers in design ?

*Or*

- (b) With neat sketches, explain all the feedback devices used in CNC.

## Module III

13. (a) Write a manual part program in (i) fixed format ; (ii) Tab sequential format ; and (iii) Word address format to machine the internal surfaces of a tapered threaded hole of a component. Assume suitable dimensions and use incremental positioning.

*Or*

- (b) Write an APT part program to perform milling operation of pockets. Assume suitable dimensions of the part and list all the statements.

## Module IV

14. (a) Define group technology. Discuss any one method of group technology and apply it to a production system.

*Or*

- (b) Explain the following :—

- (i) Types of FMS.
- (ii) FMC.
- (iii) JIT.

(3 × 4 = 12 marks)

## Module V

15. (a) With neat sketches, explain the kinematics and dynamics of a robotic system. What are the challenges involved in design of a SCARA robot ? Explain.

*Or*

- (b) Explain robotic control, drives, actuators and sensors of a robotic system when applied to a manufacturing industry.

[5 × 12 = 60 marks]