

B.E. Mechanical Engineering (Model Curriculum) Semester-VII  
**PCC-ME-401 - Automation in Manufacturing**

P. Pages : 2

Time : Three Hours



**GUG/S/25/14262**

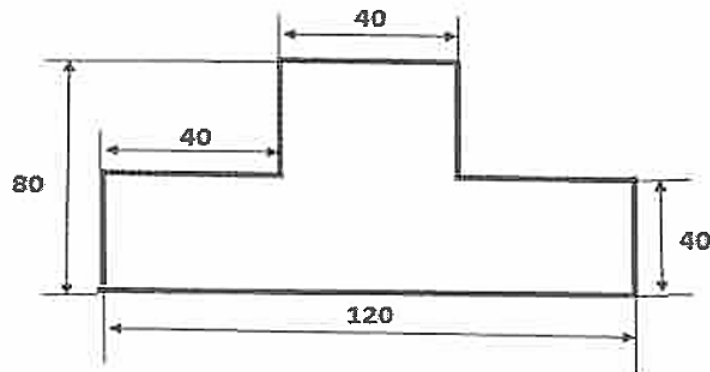
Max. Marks : 80

- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Diagrams and Chemical equation should be given wherever necessary.
  5. Illustrate your answers wherever necessary with the help of neat sketches.
  6. Solve Q. 1 or Q. 2, Q. 3 or Q.4, Q. 5 or Q. 6, Q. 7 or Q. 8, Q. 9 or Q. 10,

1. a) Explain automation principles and strategies. 8  
b) Explain the functions of automation for information processing in manufacturing. 8

**OR**

2. a) Explain and classify different system configurations in assembly line. 8  
b) Define Automation in Manufacturing and explain the various reasons for automation. 8
3. a) Write a complete APT part programmed for end milling for part in figure. The diameter of cutter is 10 mm, speed 500 r.p.m. and feed = 10 mm/min. Assume suitable data. 8



- b) What is Numerical control? With the help of sketch explain the closed loop and open loop NC systems. 8

**OR**

4. a) Explain the point - to - point, straight cut and countering NC, Absolute and incremental positioning. 8  
b) Define Numerical control. What are its advantages? Describe different types of numerical control system with suitable examples. 8
5. a) Write short notes on. 8  
1) Wrist Assembly with neat sketch      2) Sensors in robot  
3) Accuracy      4) Repeatability

- b) What is flexible manufacturing System? Explain the different configuration of FMS. 8

**OR**

6. a) What is computer integrated manufacturing? Explain CIM system in brief. 8

- b) Describe the Retrieval CAPP system? What are the benefits of CAPP? 8

7. a) Define AGVs. Mention various types of AGV. Also explain the following in context of AGV. 8

1. Vehicle Guidance technology
2. Vehicle Managements
3. Safety

- b) Discuss various types of material handling (transport) equipments. 8

**OR**

8. a) Explain AS/RS for the 8  
i) S/R machine  
ii) storage modules  
iii) Aisle transfer car.

- b) Explain the term "zone blocking" with respect to AGVS. What are the various means used to accomplish blocking? 8

9. a) What is process optimization and why is process optimization important for process manufacturing plants. 8

- b) Explain in details hydraulic and pneumatic system concept and components. 8

**OR**

10. a) Define Group technology and explain what part families are. 8

- b) Explain the Opitz classification system. 8

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