

AU – 2851

Seventh Semester B. E. (Mechanical Engineering) (CGS) Examination

AUTOMATION ENGINEERING

Paper – 7 ME 04

(USC – 10873)

P. Pages : 4

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) All questions carry equal marks.
- (3) Answer any **Three** questions from Section A and any **Three** questions from Section B.
- (4) Assume suitable data wherever necessary.
- (5) Illustrate your answer wherever necessary with the help of neat sketches.
- (6) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) What do you mean by "Automated System" ? What are the elements of an automated system ? 6
- (b) Explain the different reasons in Favor of automation and against the automation. 7

OR

2. (a) What are the different work part transfer mechanisms ? Explain any one in detail. 6
- (b) The table No. 1 shows the – precedence relationship and elements time for a new model of toy. Construct the precedence -- diagram and find the number

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P.T.O.

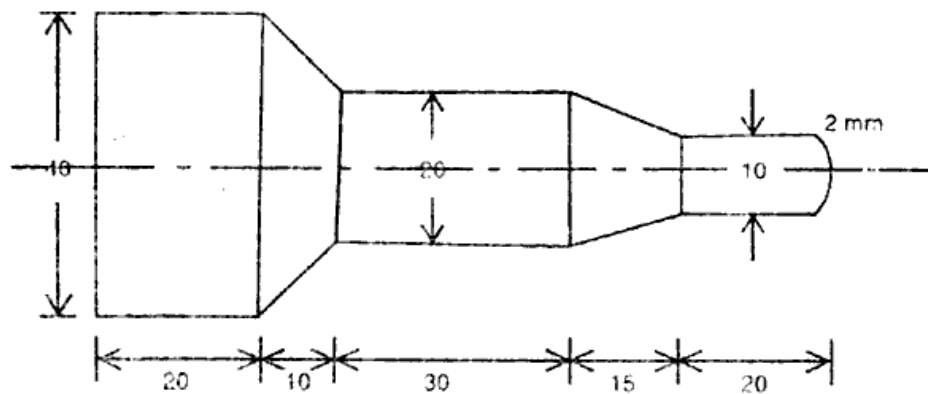
of stations required to distribute work. Take ideal cycle time as 1.0 minute.

Work Element	Te(min)	Immediate Predecessors
1	0.5	—
2	0.3	1
3	0.8	1
4	0.2	2
5	0.1	2
6	0.6	3
7	0.4	4, 5
8	0.5	3, 5
9	0.3	7, 8
10	0.6	6, 9

Table No. 1

7

3. (a) Explain with suitable examples different types of motion control system in NC system. 5
- (b) Prepare NC part program for the component shown in Figure below. Take Feed = 200 mm/min, Speed 800 r.p.m. and depth of Cut 1 mm.

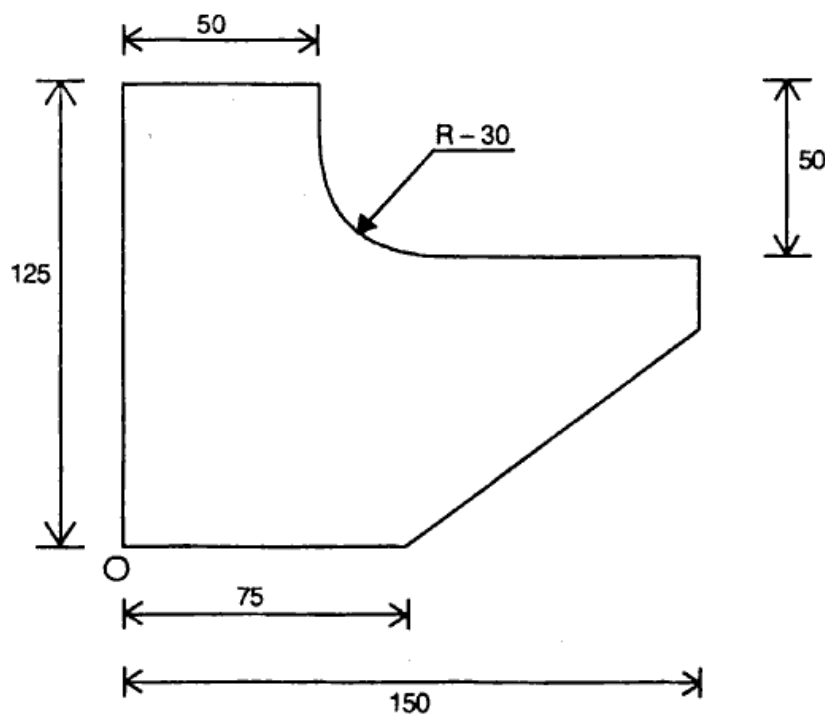


(All dimensions are in mm)

9

OR

4. (a) Explain the different statements in APT with suitable examples. 5
(b) Write the complete APT part program for the geometry shown in Fig. Use the lower left corner of the part as the origin in the X-Y axis system.



5. (a) Explain the need to replace the human labor by robots. 6
(b) Explain the importance of "robot economy". How cost of a robot and saving by robot is calculated ? 7

OR

6. (a) What are the differences between grippers and tools ? Explain different types of grippers use in robot. 7
(b) Explain the following technical-specifications of a robot :—
 - (i) Vertical reach.
 - (ii) Horizontal reach.
 - (iii) Pay load.
 - (iv) Repeatability. 6

SECTION B

7. (a) Explain the step by step procedure for implementation of group technology. 6
(b) What are the different types of G.T. code structures ? Explain with suitable examples. 7

OR

8. (a) Explain the process of production flow analysis with suitable example. 6
(b) What do you mean by process planning ? What are the important steps in computer aided process planning ? 7
9. (a) What do we need flexibility in manufacturing ? What are the different types of flexibilities required in manufacturing ? 6
(b) Explain the important components of flexible manufacturing system. 7

OR

10. (a) What do you mean by ideal material handling system ? What are the different areas that can be affected by an improved material handling system ? 6
(b) What exactly is an AGV's ? What are the different types of navigation system used in AGV's ? 7
11. (a) What is CIM ? What are the different elements of CIM system ? 7
(b) What are the important factors involved in implementation of CIM ? 7

OR

12. (a) What are the benefits and applications of CMM ? 7
(b) What is online inspection ? Explain the different contact and non-contact techniques of inspection. 7

