CBCS SCHEME

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15ME62

Sixth Semester B.E. Degree Examination, July/August 2022
Computer Integrated Manufacturing

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Define Automation. Explain different types of Automation. **(08 Marks)**

b. State and explain the different reasons for Automation. **(08 Marks)**

OR

2 a. What do you understand by Automated flow line? List the various symbols used to represent an automated flow line. **(08 Marks)**

b. The average part produced in a certain batch manufacturing plant must be processed through an average of 8 machines, 15 new batches are launched each week operating time is 8 min. Average set – up time is 8 hrs, batch size is 30. Average non-operation time is 15hrs/machine. Number of machines available in the plant is 20. The plant operates on an average of 80 production hours per week. Determine i) MLT ii) Production rate iii) Plant utilization iv) WIP. **(08 Marks)**

Module-2

3 a. Explain the design process using CAD , with neat block diagram. **(08 Marks)**

b. A square with an edge length of 10 units is located on the origin with one of the edge at an angle of 30° with positive X – axis. Calculate the new position of the square if it is rotated about Z – axis by an angle 30° in clockwise direction. **(08 Marks)**

OR

4 a. Define CAPP. With block diagram, explain Generative type Process Planning System. **(08 Marks)**

b. Explain the structure of MRP system, with the help of block diagram. **(08 Marks)**

Module-3

5 a. State and explain the components of Flexible Manufacturing System. **(08 Marks)**

b. List out the advantages of Group Technologies. **(08 Marks)**

OR

6 a. Explain in brief the different types of AS/RS Systems. **(06 Marks)**

b. A project has the following tasks. Its immediate predecessor and task times are given below. Using largest Candidate rule balance the line and determine
i) Number of work stations ii) Balance delay of line and iii) Line efficiency.
Take cycle time = 1 min.

Tasks	1	2	3	4	5	6	7	8	9	10	11	12
Proceeded by	-	-	1	1,2	2	3	3	3, 4	6,7,8	5,8	9,10	11
Te_{min}	0.2	0.4	0.7	0.1	0.3	0.11	0.32	0.6	0.27	0.38	0.5	0.12

(10 Marks)

Module-4

7 a. Describe the advantages , disadvantages and applications of CNC machines. **(08 Marks)**

b. Write a part program for the following Fig. Q7(b).Pick drilling operation. Take drill diameter 8mm. **(08 Marks)**

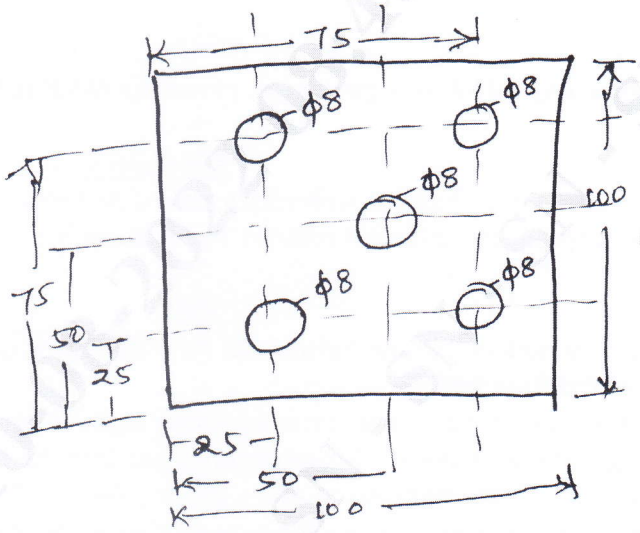

Fig. Q7(b) All the dimensions are in mm.

OR

8 a. Sketch and explain common robot configuration. **(08 Marks)**

b. Explain briefly with diagrams : i) Ship sensor ii) Range sensor. **(08 Marks)**

Module-5

9 a. What is Additive Manufacturing? Explain steps involved in additive manufacturing. **(08 Marks)**

b. Explain Working Binder Jetting process, with neat sketch. Discuss advantages for it. **(08 Marks)**

OR

10 a. List and explain IoT applications in manufacturing. **(08 Marks)**

b. Explain in brief the various components of Industry 4.0. **(08 Marks)**

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