CBCS SCHEME

USN | | | | | | | | | | |

18MCM12

First Semester M.Tech. Degree Examination, Dec.2018/Jan.2019
Automation and Computer Integrated Manufacturing

Time: 3 hrs.

Max. Marks: 100

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

Module-1

1 a. Explain with block diagram product cycle in a computerized manufacturing environment.
   (10 Marks)
   b. With neat sketches, explain sequential and concurrent engineering. **(10 Marks)**

OR

2 a. Write a short note on CAD, CAM and CIM. **(10 Marks)**
   b. Explain in brief Hard and Soft prototyping concepts. **(10 Marks)**

Module-2

3 a. Explain retrieval and generative type computer aided process planning systems. **(10 Marks)**
   b. Explain briefly the technologies available for use in automatic identification system.
   (10 Marks)

OR

4 a. With neat sketch, explain any two linear and one rotary work part transfer mechanisms.
   (10 Marks)
   b. Explain with suitable sketch, the activities performed in three phases of shop floor control systems. **(10 Marks)**

Module-3

5 a. A 22-station inline transfer machine has an ideal cycle time of 0.55min. Probability of station breakdown is P = 0.01. Average down time = 8.0 min per line stop. Use lower bond approach and determine.
   i)   Ideal production rate
   ii) Frequency of line stops
   iii) Average actual production rate
   iv) Line efficiency. **(10 Marks)**
   b. Explain elements of part delivery system with suitable sketches. **(10 Marks)**

OR

6 a. A 10 station inline assembly machine has an ideal cycle time = 6sec. The base part is automatically loaded prior to the first station and components are added at each of the stations. The fraction defect rate at each of the ten stations is q = 0.01 and probability that a defect will jam is m = 0.5. When a jam occurs, the average downtime is 2 min. cost to operate the assembly machine is Rs.2,800/hr other costs are ignored. Determine the following:
   i)   Average production rate of all assemblies
   ii) Yield of good assemblies
   iii) Average production rate of good product
   iv) Uptime efficiency of the assembly machine
   v)   Cost per unit. **(10 Marks)**

b. With suitable block diagrams, explain direct digital control and supervisory computer control. **(10 Marks)**

Module-4

7 a. Explain various types of material handling equipments. **(10 Marks)**

b. Discuss different functions of material handling and any two types of conveyor systems. **(10 Marks)**

OR

8 a. Discuss three technologies that are used in automated guided vehicle system. **(10 Marks)**

b. Explain carousel storage systems. Also mention AS/RS applications. **(10 Marks)**

Module-5

9 a. Explain briefly various applications of industrial robot. **(10 Marks)**

b. Explain with suitable sketch the basic functions performed by machine vision system. **(10 Marks)**

OR

10 a. With a neat sketch, explain scanning laser beam devices. **(10 Marks)**

b. Explain the different non contact non optical inspection methods. **(10 Marks)**

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