

CBCS SCHEME

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18MCM12

First Semester M.Tech. Degree Examination, Dec.2019/Jan.2020 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. Write a note on CAD, CAM, CAE, CIM and FMS. (10 Marks)
b. With a suitable block diagrams, explain product cycle and product development cycle. (10 Marks)

OR

- 2 a. With a suitable example, explain sequential and concurrent engineering. (10 Marks)
b. Explain in brief hard and soft prototyping concept. (10 Marks)

Module-2

- 3 a. What are the major manufacturing planning systems? Explain in detail about generative type CAPP. (10 Marks)
b. With neat sketch explain over and under type work part transfer mechanism. (10 Marks)

OR

- 4 a. Mention the inputs and outputs of MRP. Explain them with a neat diagram. (10 Marks)
b. Explain the three phases in shop floor control system. (10 Marks)

Module-3

- 5 a. Explain the elements of part delivery system with suitable sketch. (10 Marks)
b. What is adaptive control? With suitable block diagram explain general configuration of an adaptive control system. (10 Marks)

OR

- 6 a. With a neat sketch, explain supervisory computer control. (10 Marks)
b. A 8 stations transfer line is used to produce a component in a motor which is currently produced by conventional methods. The manufacturing department has estimated the ideal cycle time as 1.2min. The frequency of break downs is 0.1 stops cycles and the average down time per stop is 7min. The scrape rate for the current conventional processing methods is 5%, the starting cost of the component is Rs.1.5 and it will cost Rs.45 per hour to operate the line. The cost of cutting tools is Rs.0.15 work part. Determine production rate, number of hours to meet the demand of 2000 units/week. Line efficiency, balance delay and cost per unit produced. (10 Marks)

Module-4

- 7 a. Explain basic three functions performed in vehicle guidance and routing of an AGV. (10 Marks)
b. List and explain in brief, different types of material handling equipments. (10 Marks)

OR

- 8 a. Discuss the important types of automated storage/retrieval systems. Also mention AS/RS applications. (10 Marks)
- b. What is conveyor? Explain in brief, types of conveyor. (10 Marks)

Module-5

- 9 a. Explain following optical inspection method with sketches:
i) Scanning laser technique (10 Marks)
ii) Optical triangulation technique. (10 Marks)
- b. Explain the construction of coordinate measuring machine. (10 Marks)

OR

- 10 a. Discuss various applications of robots in industries. (10 Marks)
- b. Write a short note on:
i) Computer Aided Testing (10 Marks)
ii) Contact Inspection Techniques
