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15ME62

Sixth Semester B.E. Degree Examination, Feb./Mar. 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. Explain with neat sketches, Fixed, Flexible and Programmable Automation. (08 Marks)
b. Define Manufacturing Load time, Production Rate, Utilization, Availability and Work in progress with Mathematical expressions. (08 Marks)

OR

- 2 a. Differentiate between Upper Bound Approach and Lower Bound Approach with respect to automated flow lines without storage buffers. (08 Marks)
b. Explain General configuration of automated flow lines, with neat sketches. (08 Marks)

Module-2

- 3 a. Explain Computer Aided Design process, with neat diagram. (08 Marks)
b. Explain the functions of Graphics Package. (08 Marks)

OR

- 4 a. What is MRP? Explain the structure of MRP system, with block diagram. (08 Marks)
b. Explain the Retrieval type of Computer Aided Process Planning system with the help of block diagram. (08 Marks)

Module-3

- 5 a. Define FMS. Explain the types of FMS based on flexibility. (08 Marks)
b. What do you mean by Group Technology? Enumerate the advantages and disadvantages of Group Technology. (08 Marks)

OR

- 6 a. Explain the following terms in line balancing : i) Minimum Rational work element
ii) Precedence diagram iii) Cycle time iv) Balance delay. (08 Marks)
b. A new product is to be assembled in a plant. The data gives the precedence relationship and element Times. Using Largest Candidate rule method.
i) Construct precedence diagram.
ii) If the cycle time is 1.5min, what is the minimum number of work station required?
iii) Calculate the balance delay.

Element	1	2	3	4	5	6	7	8
Immediate Predecessor	-	-	1, 2	2	3	3, 4	4	5, 6, 7
Time	1.0	0.5	0.8	0.3	1.2	0.2	0.5	1.5

(08 Marks)

Module-4

- 7 a. Explain the fundamental steps involved in the development of part program for milling operations. (08 Marks)
b. State the advantages, disadvantages and applications of CNC machine tools. (08 Marks)

OR

- 8 a. Explain the basic configuration of Industrial Robots with neat sketches. (08 Marks)
b. Explain the following with reference to Precision of robots :
i) Control Resolution ii) Spatial Resolution
iii) Accuracy iv) Repeatability. (08 Marks)

Module-5

- 9 a. Explain the different states involved in AM process. (08 Marks)
b. Explain with the neat sketch, Sheet Lamination process. (08 Marks)

OR

- 10 a. Define IOT. Explain the application of IOT in manufacturing. (08 Marks)
b. Explain how Big data and Cloud computing can support IOT. (08 Marks)
