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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

MECHANICAL ENGINEERING

Eight Semester

MF9402 FLEXIBLE MANUFACTURING SYSTEMS

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Define FMS.
2. What do you understand the term (a) Sequential FMS (b) Engineering FMS?
3. Briefly explain the composition of FMS.
4. Briefly explain the Computer control of work center.
5. Match the following
 - a. Process flexibility - Alternative operation
 - b. Machine flexibility - Minor Setup operation
 - c. Product flexibility - Multitask operation
 - d. Operation flexibility - Incurring setup operation
6. List out any four limitation of simulation software.
7. Define group technology.
8. Define parts classification and coding.
9. What is machine tool in FMS system?
10. What do you understand on modular design of FMS?

Part – B (5 x 16 = 80 marks)

11. Derive the manufacturing Cells Using Production Flow Analysis matrix
 - (a) Rank order cluster algorithm
 - (b) Direct cluster algorithm

(8+8)
 12. a) Write down the algorithm steps for the following scheduling problems.
 - (i) Single product
 - (ii) N-product
 - (iii) Single batch
 - (iv) N-Batch scheduling problem

(4+4+4+4)
- (OR)**
- b) Explain the Knowledge based scheduling system on FMS system

(16)

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13. a) (i) Explain about the three FMS components
(ii) Describe about any three types of FMS layout **(8+8)**
(OR)
b) Explain Hierarchy of computer control and FMS supervisory computer control **(16)**
14. a) (i) Explain about the seven steps of simulation software
(ii) Explain any two types of FMS database system. **(8+8)**
(OR)
b) Explain the three types of FMS software. **(16)**
15. a) Explain FMS application in aerospace machining and sheet metal forming. **(16)**
(OR)
b) Explain the Artificial intelligence and Expert systems in FMS **(16)**