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# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech II Semester End Examinations (Supplementary) - January, 2018

**Regulation: IARE-R16**

## FLEXIBLE MANUFACTURING SYSTEMS (CAD/CAM)

**Time: 3 Hours**

**Max Marks: 70**

**Answer ONE Question from each Unit**

**All Questions Carry Equal Marks**

**All parts of the question must be answered in one place only**

### UNIT – I

1. (a) What are the basic components of flexible manufacturing systems. Explain with suitable example. [7M]  
 (b) What are the different types of flexible manufacturing systems. Explain with suitable example. [7M]
2. (a) Diagrammatically explain any one type of flexible manufacturing systems layout. [7M]  
 (b) What are the different factors effecting flexible manufacturing systems layouts. [7M]

### UNIT – II

3. (a) What are the advantages and disadvantages of centralized control. [7M]  
 (b) Explain backward scheduling approach with infinite capacity loading. [7M]
4. (a) Explain forward scheduling approach with finite capacity loading. [7M]  
 (b) Explain the terms conflicts and synchronization in terms of modelling issues. [7M]

### UNIT – III

5. (a) What are the interwoven steps involved in simulation modeling. [7M]  
 (b) A 20-station transfer line is divided into two stages of 10 stations each. The ideal cycle time of each stage is  $T_o = 1.2$  min. All of the stations in the line have the same probability of stopping,  $p = 0.005$ . We assume that the downtime is constant when a breakdown occurs,  $T_d = 8.0$  min. Using the upper-bound approach, compute the line efficiency for the following buffer capacities:
  - i.  $b = 0$  [7M]
  - ii.  $b = 10$
  - iii.  $b = 100$
6. (a) What are the issues related with deterministic and stochastic modelling. [7M]  
 (b) Differentiate between transfer lines with buffer storage and without buffer storage. [7M]

#### UNIT – IV

7. (a) Explain briefly about manufacturing cycle time. [7M]  
(b) What are different problems in computation of transient analysis. [7M]
8. (a) Explain the application of performance analysis in manufacturing . [7M]  
(b) Explain mathematical programming approach in flexible manufacturing systems. [7M]

#### UNIT – V

9. (a) Explain the system of preventive maintenance. [7M]  
(b) Demonstrate KANBAN system with suitable examples. [7M]
10. (a) What is AS/RS systems. Explain briefly about AS/RS systems. [7M]  
(b) Explain the single card system of KANBAN with diagram. [7M]

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