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Question Paper Code: 92012

M.E. DEGREE EXAMINATION, OCTOBER 2014.

Elective

CAD / CAM

01PCD505 – PERFORMANCE MODELING AND ANALYSIS OF MANUFACTURING SYSTEMS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define the term: Manufacturing lead time.
2. Differentiate between simulation model and analytical model.
3. What is sojourn time of a Markov process?
4. What is birth-death process in manufacturing?
5. State few examples of queues in a typical manufacturing system.
6. Write down the Little's queuing formula.
7. What is a tandem queue?
8. Define the closed server model for a queuing network.
9. List put the applications of Petri Nets in manufacturing.
10. What is KANBAN?

PART – B (5 x 14 = 70 Marks)

11. (a) Discuss the different performance measures used for manufacturing systems. (14)

Or

- (b) With a neat sketch, elaborate the different layers of Open System Interconnect model used in factory networking. (14)

12. (a) With suitable examples, differentiate between Discrete Time Markov Chain and Continuous Time Markov Chain. (14)

Or

(b) Explain the Markov model of a transfer line. (14)

13. (a) Elaborate the performance measures used in queuing systems. (14)

Or

(b) Discuss the queuing model for a flexible manufacturing system. (14)

14. (a) With suitable examples and neat sketch, explain the open queuing network and closed queuing network. (14)

Or

(b) Write note on Garden Newell networks. (14)

15. (a) With a suitable example, draw the configuration of a classical Petri net and define the important terms and elements involved developing a Petri net model. (14)

Or

(b) Write note on Stochastic Petri net. (14)

PART – C (1 x 10 = 10 Marks)

16. (a) Discuss the input-output model of a manufacturing system, with a neat sketch. (10)

Or

(b) All the car owners are expected to fill up their fuel tanks exactly half full. At the present time, an average of 7.5 customers per hour arrives at a single-pump gas station. It takes an average of 4 minutes to service a car. Assume that inter arrival and service times are exponential. Determine the average number of customers presents in the queuing system and also the average time a customer spends in the system. (10)