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**E Reg. No. :**

**Question Paper Code: 57P11**

Ph.D. COURSE WORK EXAMINATION, NOV 2017

Elective

CAD / CAM

15PCD505-PERFORMANCE MODELING AND ANALYSIS OF

MANUFACTURING SYSTEM

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | (a) | A manufacturing company ships (by truckload) its product to three different distribution centers on a weekly basis. Demands vary from week to week ranging over 0, 1, and 2 truckloads needed at each distribution center. Conceptualize an experiment where a week is selected and then the number of truckloads demanded at each of the three centers are recorded. (a) Describe the sample space, i.e., list all outcomes. (b) How many possible different events are there? (c) Write the event that represents a total of three truckloads are needed for the week. (d) If each event containing a single outcome has the same probability, what is the probability that a total demand for three truckloads will occur? | CO1- U | (20) |
|  |  | Or |  |  |
|  | (b) | Explain the working principle of Control system architecture. | CO1- U | (20) |
|  |  |  |  |  |
| 2. | (a) | Explain Continuous Time Markov Chain Models. | CO2- U | (20) |
|  |  | Or |  |  |
|  | (b) | Explain the working principle and applications of Steady state analysis of BD Processes. | CO2- U | (20) |
|  |  |  |  |  |
| 3. | (a) | Explain Steady state analysis of M/M/m queue theories in brief. | CO3- Ana | (20) |
|  |  | Or |  |  |
|  | (b) | Give the design aspect of extremely Analysis of a flexible machine center. | CO3- Ana | (20) |
|  |  |  |  |  |
| 4. | (a) | Give the design aspect of extremely Little's law in queuing networks. | CO4- Ana | (20) |
|  |  | Or |  |  |
|  | (b) | What are the characteristics of Tandem queue and briefly explain. | CO4- U | (20) |
|  |  |  |  |  |
| 5. | (a) | Explain the working principle and applications of KANBAN systems. | CO5- U | (20) |
|  |  | Or |  |  |
|  | (b) | Explain Transition firing and reachability theories in brief. | CO5- U | (20) |
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