Subject : Elective-II : Operations Research (Production Management)

Day : Thursday   **S.D.E.**   ‖‖‖‖‖‖‖‖‖‖   Time : 02.00 P.M. TO 05.00 P.M.
Date : 08/12/2016   **33492**   Max Marks : 70   Total Pages : 1

N.B.:
1) Attempt any **FOUR** questions from Section –I and any **TWO** questions from Section –II.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SAME** answer book.
4) Use of non programmable **CALCULATOR** is allowed.

SECTION-I

Q.1 What is dynamic programming? In what areas of management can it be applied successfully? **(10)**

Q.2 What do you understand by 'Quadratic Programming'? How does Quadratic programming problem differ from the Liner Programming? **(10)**

Q.3 What is parametric programming? Explain the basic difference between sensitivity analysis and parametric programming. **(10)**

Q.4 Explain the term network analysis. When is it used? **(10)**

Q.5 Write short notes on any **TWO** of the following: **(10)**
   a) Applied Queuing Models
   b) System Reliability
   c) Inventory Control Techniques
   d) Post Optimality Analysis

SECTION-II

Q.6 Describe the problem of replacement of items whose maintenance costs increase with time. You may assume that the value of money remains constant. **(15)**

Q.7 A company uses annually 24,000 units of a raw material which costs Rs. 1.25 per unit. Placing each order costs Rs. 22.5 and the carrying cost is 5.4 percent per year of the average inventory. Find the economic order quantity, and the total inventory cost (including the cost of material). Should the company accept the offer made by the supplier at a discount of 5% on the cost price on a single order of 24,000 units? Suppose the company works for 300 days a year and if the procurement time is 12 days and safety stock is 400 units, find the re-order point, the minimum, maximum and average inventory. **(15)**

Q.8 A warehouse has only one loading dock manned by a three person crew. Trucks arrive at the loading dock at an average rate of 4 trucks per hour and the arrival rate is Poisson distributed. The loading of a truck takes 10 minutes on an average and can be assumed to be exponentially distributed. The operating cost of a truck is Rs. 20 per hour and the members of the loading crew are paid at Rs. 6 each per hour. Would you advise the truck owner to add another crew of three persons? **(15)**

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