

S.D.E.

M.B.A. SEM-IV (2010 COURSE)(3 YEAR COURSE) :

WINTER - 2017

SUBJECT : ELECTIVE – IV: c) OPERATIONS RESEARCH (PRODUCTION MANAGEMENT)

Day : Saturday

Time : 02.00 P.M. TO 05.00 P.M.

Date : 23/12/2017

W-2017-4292

Max. Marks : 70

N.B.:

- 1) Attempt ANY FOUR questions from Section – I and ANY TWO questions from Section – II.
- 2) Answers to both the sections should be written in SEPARATE answer books.
- 3) Graph papers, statistical tables will be provided if necessary.
- 4) Use of non-programmable CALCULATOR is allowed.
- 5) Figures to the right indicate FULL marks.

SECTION – I

- Q.1 What is Replacement Problem? Describe some important replacement situations. [10]
- Q.2 What is Dynamic Programming? What sort of problems can be solved by it? [10]
- Q.3 Write a detailed note on Sensitivity Analysis. [10]
- Q.4 Solve the following Non-Linear Programming Problem graphically: [10]
Minimize: $z = x_1^2 + x_2^2$
Subject to the constraints:
 $x_1 + x_2 \geq 4$
 $2x_1 + x_2 \geq 5$
 $x_1, x_2 \geq 0$
- Q.5 Write short notes on ANY TWO of the following: [10]
a) Network Models
b) Applied Queuing Models
c) System Reliability
d) Inventory Control

SECTION – II

- Q.6 Arrivals at a telephone booth are considered to be Poisson, with an average time of 10 minutes between one arrival and the next. The length of a phone call assumed to be distributed exponentially with mean 3 minutes. Then, [15]
a) What is the probability that a person arriving at the booth will have to wait?
b) What is the average length of the queues that form from time to time?
c) The telephone department will install a second booth when convinced that an arrival would expect to have to wait at least three minutes for the phone. By how much must the flow of arrivals be increased in order to justify a second booth?
- Q.7 A company uses annually 50,000 units of an item each costing Rs. 1.20. Each order costs Rs. 45 and inventory carrying costs 15% of the annual average inventory value. [15]
a) Find Economic Order Quantity (EOQ)
b) If the company operates 250 days a year, the procurement time is 10 days and safety stock is 500 units, find the reorder level, maximum, minimum and average inventory.
- Q.8 What is Quadratic Programming? Explain any one method of solving it. [15]

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