S.D.E.

M.B.A. (I.T.) SEM-III (2013 COURSE) : SUMMER - 2018

SUBJECT: OPERATIONS RESEARCH

Day: Thursday
Date: 07/06/2018

Time: 10.00 A.M. TO 1.00 P.M.
Max. Marks: 70

S-2018-4526

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) Answer to both the sections should be written in the **SEPARATE** answer book.
4) Use of Non-programmable **CALCULATOR** is allowed.
5) Graph paper should be provided on request.

SECTION-I

Q.1 What is Operations Research? Discuss applications of operations research in brief? **(10)**

Q.2 Use the Graphical Method to solve the following L.P.P. **(10)**

Minimize $Z = 3x_1 + 2x_2$

Subject to:

$$5x_1 + x_2 \geq 10$$
$$x_1 + x_2 \geq 6$$
$$x_1 + 4x_2 \geq 12$$
$$x_1, x_2 \geq 0$$

Q.3 Explain Simulation Process. Discuss the applications of Simulation with suitable examples. **(10)**

Q.4 A departmental head has four subordinates and four tasks to be performed. The subordinates differ in efficiency and the tasks differ in their intrinsic difficulty. His estimates of the times that each man would take to perform each task is given below in the matrix. **(10)**

Sub-ordinates	Tasks			
	I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

Determine the allocations which minimize the total cost.

Q.5 Write short notes on **ANY TWO** of the following: **(10)**

a) Network Analysis

b) Limitations of LPP

c) History of Operations Research

P.T.O.

SECTION-II

Q.6 Solve the following transportation problem for Minimization. Test it for Optimality. **(15)**

Source	Destination			
	A	B	C	Supply
X	4	8	8	**76**
Y	16	24	16	**82**
Z	8	16	24	**77**
Demand	**72**	**102**	**41**	

Q.7 What is degeneracy in transportation problem? How it will overcome? Explain with suitable example. **(15)**

Q.8 A project has following time schedule. **(15)**

Activity	Time in weeks
1-2	4
1-3	1
2-4	1
3-4	1
3-5	6
4-9	5
5-6	7
5-7	8
7-8	2
8-9	1
8-10	8
9-10	7

a) Construct PERT Network and compute T_E and T_L for each event.

b) Compute critical path and duration of the project.

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