

Reg. No.

--	--	--	--	--	--	--	--	--	--



MBAH 454

II Semester M.B.A. Degree Examination, May/June 2019

BUSINESS ADMINISTRATION

Operations Research

Time : 3 Hours]

[Max. Marks : 70

SECTION – A

Answer **any two** questions. Each question carries **10** marks. Answer to the question should not exceed **5** pages. **(2 × 10 = 20)**

1. Explain different phases of an Operation Research Study.
2. Explain the advantages and limitations of simulation.
3. Describe the steps involved in the formation of LPP.

Sri Dharmasthala Manjunatheshwara
College of Business Management, Mangalore
Post Graduate Centre for Management
Studies and Research Library

SECTION – B

Answer **any three** questions. Each question carries **12** marks. Answer to each question should not exceed **6** pages. **(3 × 12 = 36)**

4. Solve the following linear program using graphical method :

$$\text{Maximize : } Z = X_1 + 3X_2$$

$$\text{Subject to : } 2X_1 + 3X_2 \leq 6$$

$$X_1 + 2X_2 \leq 10$$

$$X_1, X_2 \geq 0$$

5. A railway booking office has 3 counters to receive request for reservation of tickets. On an average 48 persons arrive in an 8-hour day. Each reservation clerk spends 15 minutes on an average on an arrival. If the arrivals are Poissonally distributed and service times are according to exponential distribution, find :

- (a) Average number of passengers in the system
- (b) Average number of passengers waiting to be served.



6. Solve the following game and state the optimum strategy for both players. Also determine which player wins how much?

		B		
		B1	B2	B3
A	A1	1	7	2
	A2	6	2	7
	A3	6	1	6

7. The maintenance cost and resale value per year of a machine whose purchase price is Rs. 7,000 is given below :

Year :	1	2	3	4	5	6	7	8
Maintenance cost in Rs.	900	1200	1600	2100	2800	3700	4700	5900
Resale value in Rs.	4000	2000	1200	600	500	400	400	400

When should the machine be replaced?

8. There are three sources or origins which store a given product. These sources supply these products to four dealers. The capacities of the sources (S_i) and the demands at dealers (D_j) are as given below :

$$S_1 = 150, S_2 = 40, S_3 = 80$$

$$D_1 = 90, D_2 = 70, D_3 = 50, D_4 = 60$$

The cost of transporting the product from various sources to various dealers is shown in the table below :

		D1	D2	D3	D4
S1		27	23	31	69
S2		10	45	40	32
S3		30	54	35	57

Find out the optimum solution for transporting the products at a minimum cost.



SECTION - C

(Compulsory)

Answer to this question should not exceed 6 pages. (1 × 14 = 14)

9. The table given below gives different time estimates for activities of a project.

Activities Time estimates in week

Activities	t_e	t_m	t_p
1-2	3	5	13
1-3	1	2	15
2-4	6	7	8
3-4	2	5	14
2-6	2	4	12
4-5	4	6	8
4-6	5	9	13
5-7	1	2	3
6-7	1	4	7

Sri Dharmasthala Manjunatheshwari
College of Business Management, Mar
Post Graduate Centre for Management
Studies and Research Library

- (a) Draw the project diagram.
- (b) Calculate critical path.
- (c) Find the probability that project will be completed within 29 weeks.
- (d) What due date has about 90 percent of being met?