QP CODE: 24803704

24803704

Reg No : .....

Name : .....

M.B.A. DEGREE EXAMINATION, JUNE 2024

Second Semester

Faculty of Management Science

MASTER OF BUSINESS ADMINISTRATION

Core - MB010205 - MANAGEMENT SCIENCE

2019 Admission Onwards

A4D283DB

Time: 3 Hours Maximum Marks: 60

Part A

*Answer any **five** questions. Each question carries **2** marks.*

1. State two limitations of OR
2. What do you mean by decision making under uncertainty?
3. Define slack and surplus variables in a LPP.
4. List down two practical applications of assignment problem.
5. What is VAM?
6. What is CPM?
7. What are the assumptions made in the theory of games?

(5×2 = 10 Marks)

Part B

*Answer any **five** questions. Each question carries **6** marks.*

8. Describe the applications of OR.

9.

Solve graphically:

Minimize z = 5x1+4x2

Subject to constraints

$4x_1 + x_2 \geq 40$

$2x_1 + 3x_2 \geq 90$

$x_1, x_2 > 0$

10. What is transportation problem? What do you mean by balanced transportation problem?

11. Describe the types of time estimates in project activity under the PERT Method.

12. A computer has a large number of electronics tubes. They are subject to the following mortality rates:

t	0	1	2	3	4	5
P(t)	0	0.10	0.26	0.35	0.22	0.07

If the tubes are group replaced, the cost of replacment is Rs 15 per tube. Group replacement can be done at fixed intervals in the night shift when the computer is normally not used. Replacement of individual tube that fail in service, costs Rs 60 per tube. How frequently should the tubes be replaced?

13. The research department of the consumer products division has recommended to the marketing department to launch a soap with three different perfumes. the marketing manager has to decide the type of perfumes to launch under the following estimated payoff for the various levels of sales. Estimate which type can be chosen under maximax, maximin, Laplace, and Hurwicz alpha criterion when alpha =0.6, 0.2,0.2 respectively.

	PERFUME 1	PERFUME 2	PERFUME 3
S1	250	40	60
S2	15	20	25
S3	10	5	3

14.

1. A company manufactures around 200 mopeds. Depending upon the availability of raw materials and other conditions, the daily production has been varying from 196 mopeds to 204 mopeds, whose probability distribution is as given below. The finished mopeds are transported in a specially designed three-storeyed lorry that can accommodate only 200 mopeds. Using the following random numbers 82, 89, 78, 24, 53, 61, 18, 45, 04, 23, 50, 77, 27, 54, 10, simulate the process to find out

i. What will be the average number of mopeds waiting in the factory?

ii. What will be the empty spaces in the lorry?

Production / day	196	197	198	199	200	201	202	203	204
Probability	0.05	0.09	0.12	0.14	0.20	0.15	0.11	0.08	0.06

(5×6 = 30 Marks)

Part C

*Answer any **two** questions. Each question carries **10** marks.*

Question number 17 is compulsory .

15.

Solve the LPP using simplex method:

Maximize $z = 5x+10y$

Subject to constraints:

$8x+8y \leq 160$

$4x+12y \leq 180$

$x, y \geq 0$

16.

There are 1000 bulbs in the system. Survival rate is given below. The group replacement of 1000 bulbs costs Rs.100 and individual replacement costs Rs. 0.50 per bulb. Suggest a suitable replacement policy.

Week	0	1	2	3	4
Bulbs in operation at the end of the week	1000	850	500	200	100

Compulsory Question

17. Solve the following transportation problem for the optimum solution by MODI method whose cost matrix availability at each plant and requirement at each warehouse are given below:

Plant	***W1***	***W2***	***W3***	***W4***	***Availability***
P1	*190*	*300*	*500*	*100*	*70*
P2	*700*	*300*	*400*	*600*	*90*
P3	*400*	*100*	*600*	*200*	*180*
Requirement	*50*	*80*	*70*	*140*	

(2×10 = 20 Marks)