Reg. No.

B.M.S. 378 BATCH: 87 - 2016

END OF SEMESTER EXAMINATIONS, APRIL / MAY - 2019
MATHEMATICS FOR MANAGERS - II
SUBJECT CODE: 08UABM18

MAJOR : B.B.A
TIME : 3 HOURS

SEMESTER :V
MAX. MARKS :75

SECTION – A (10 x 1 = 10)

Answer ALL the questions:

1. What is the scope of O.R?
2. Define slack variable.
3. State the necessary and sufficient condition for the existence of a feasible solution to a transportation problem.
4. Define unbalanced assignment problem.
5. When do you say a game is stable?
6. Write Little's formula.
7. What are the three main phases of network project?
8. Define critical path.
9. Expand PERT.
10. How many number of time estimates involved in PERT problem?

SECTION – B (5 X 4 = 20)

Answer any FIVE questions:

11. Write down the limitations of OR.
12. A firm manufacturers two types of products A and B and sells them at a profit of Rs.2 on type A and Rs.3 on type B. Each product is processed on two machines M_1 and M_2. Type A requires 1 minute of processing time on M_1 and 2 minutes on M_2. Type B requires 1 minute on M_1 and 1 minute on M_2. Machine M_1 is available for not more than 6 hours and 40 minutes while machine M_2 is available for 10 hours during any working day. Formulate the problem as a LPP so as to maximize the profit.
13. Find the initial basic feasible solution for the following transportation problem by Vogels Approximation Method.

	M_1	M_2	M_3	Supply
F_1	1	2	6	7
F_2	0	4	2	12
F_3	3	1	5	11
Demand	10	10	10	

14. Explain the following terms
    (i) Pay off matrix
    (ii) Dominance property
15. In a game of matching coins two players, suppose A wins one unit value when there are two heads, wins nothing when there are two tails and looses $\frac{1}{2}$ unit value when there are one head and one tail. Determine the payoff matrix, the best strategy for each player, and the value of the game.
16. Construct the network for the project whose activities and their relationships are as given below:
    Activities : A,D,E can start simultaneously.
    Activities : B,C > A; G,F>D,C; H>E,F.
17. Explain various time estimates in PERT.
18. Distinguish between PERT and CPM.

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SECTION – C (3 X 15 = 45)

Answer any THREE questions:

19. Solve the following LPP by simplex method

Maximize $Z = 4x_1 + 2x_2$

Subject to

$-4x_1 + 2x_2 \leq 1$

$5x_1 - 4x_2 \leq 2$

and $x_1, x_2 \geq 0$

20. Solve the transportation problem

		Destination				
		D_1	D_2	D_3	D_4	Demand
Source	S_1	6	1	9	3	70
	S_2	11	5	2	8	55
	S_3	10	12	4	7	70
	Supply	85	35	50	45	

21. Car arrive at a petrol pump, having one petrol unit, in Poisson fashion with an average of 10 cars per hour. The service time distributed exponentially with a mean of 3 minutes.

Find (i) average number of cars in the system

(ii) average waiting time in queue

(iii) average queue length

(iv) The probability that the number of cars in the system is 2.

22. A project consists of the following activities and time estimates.

Activity	Lead time (days)	Greatest time (days)	Most likely time (days)
1-2	3	15	6
2-3	2	14	5
1-4	6	30	12
2-5	2	8	5
2-6	5	17	11
3-6	3	15	6
4-7	3	27	9
5-7	1	7	4
6-7	2	8	5

(i) Draw the network.

(ii) Find the expected project domain.

(iii) Find the standard deviation of the project length.

23. Calculate the total float, free float and independent float for the project whose activities are given below:

Activity:	1-2	1-3	1-5	2-3	2-4	3-4	3-5	3-6	4-6	5-6
Duration: (in weeks)	8	7	12	4	10	3	5	10	7	4

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