MBA(IB).II/11. 240

MBA (IB) & MIB DEGREE SUPPLEMENTARY II SEMESTER EXAMINATION APRIL 2011

SMI 2208 MANAGEMENT SCIENCE

Time : 3 Hours

Maximum Marks: 50

(All questions carry ***EQUAL*** marks)

(5 x 10 = 50)

I. A. (a) How does management science helps in managerial decision making? (4)

(b) Solve the game given below: (6)

		B's strategy		
		B_1	B_2	B_3
A's strategy	A_1	15	8	10
	A_2	10	8	12
	A_3	10	9	12

OR

B. (a) Explain the decision tree concept. (5)

(b) Current assets of a businessman are worth Rs.80,000/-. The utility pattern at various levels are given below: (5)

Assets	60,000	70,000	80,000	90,000	1,00,000	1,10,000
Utility	0.24	0.38	0.50	0.60	0.67	0.72

(i) He is offered a bet in which he has 60% chance of losing 20,000. Should he accept the offer?

(ii) Alternately, he is offered participation in two bets each involving a gain of Rs.10,000/- with probability 0.6 and loss of 10,000 with 40% chance. Should he decide differently than in (i).

II. A. (a) Write a note on integer programming. (4)

(b) Solve the L.P.P (6)

Minimize $z = 40x_1 + 24x_2$

Subject to the condition

$20x_1 + 50x_2 \geq 4800$

$80x_1 + 50x_2 \geq 7200$

and $x_1, x_2 \geq 0.$

OR

B. (a) Explain sensitivity analysis. (4)

(b) Solve the L.P.P. (6)

Minimize $z = 60x_1 + 80x_2$

Subject to

$20x_1 + 30x_2 \geq 900$

$40x_1 + 30x_2 \geq 1200$

and $x_1, x_2 \geq 0.$

III. A. (a) Write a note on Markov chain Model. (4)

(b) Find out the minimum cost solution for the following transportation problem which has cost structure as: (6)

To / From	P	Q	R	Availability
A	16	19	12	14
B	22	13	19	16
C	14	28	8	12
Requirement	10	15	17	

OR

B. (a) Discuss the steps in solvingan assignment problem. (4)

(b) Solve the following transportation problem: (6)

Factory	Store A	Store B	Store C	ai
F_1	10	8	8	8
F_2	10	7	10	7
F_3	11	9	7	9
F_4	12	14	10	4
bj	10	10	8	

IV. A (a) Mention the application of queuing system in business. (4)

(b) Find the sequence that minimizes the total elapsed time in hours required to complete the following jobs on three machines M_1, M_2 and M_3. (6)

	Jobs				
Machines	A	B	C	D	E
M_1	5	7	6	9	5
M_2	2	1	4	5	3
M_3	3	7	5	6	7

OR

B. (a) Discuss the cost involved in queuing system. (4)

(b) Four jobs are to be processed on three machines. All the jobs require machines in the same sequence M_1, M_2 and M_3. The processing times are given below: (6)

	Processing time (Hours)		
Jobs	M_1	M_2	M_3
A	5	6	7
B	8	7	8
C	7	2	10
D	3	5	9

Find the optimal solution so as to minimize total elapsed time.

(Contd.....3)

V. A. (a) Discuss the advantages and disadvantages of simulation. (4)

(b) The activities duration and direct activity costs are given below. The indirect cost is Rs.3000/- per week. Obtain the crash cost and duration of the project. (6)

Activity	Time in weeks		Cost	
	Normal	Crash	Normal	Crash
1 - 2	2	2	3000	3000
2 - 3	4	3	4000	5000
2 - 6	8	8	6000	6000
3 - 4	3	2	2000	3500
3 - 5	2	2	2000	2000
4 - 6	4	3	4000	5000
5 - 6	3	3	4000	4000
6 - 7	8	5	8000	12000

OR

B. (a) Compare PERT and CPM. (4)

(b) For the network given below, work out the expected time of completion of various activities, with the given data. (6)

Activity	Optimistic time	Pessimistic time	Most likely time
1 - 2	5	12	7
1 - 3	12	17	13
2 - 4	15	21	18
3 - 4	2	5	3
2 - 5	8	14	10
4 - 5	21	35	26

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