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Z-6027

M. B. A./M. B. A. (MM) (Second Semester) Examination, Oct.-Nov., 2015

(New/Old Course)

MANAGEMENT SCIENCE–(OR

Paper : MS/MM/MR/127

Time Allowed : Three hours

Maximum Marks : 70 New Course
85 Old Course

Note : *Attempt all questions. **One** question from each unit is compulsory. All questions carry equal marks. While attempting numerical questions working notes should essentially be a part of your answers.*

Unit-I

(a) What is Operation Research? Describe the models of used in operation research.

(b) The standard weight of a special purpose bricks is 5 kg. and its contains two basic ingredients B_1 & B_2 costs Rs. 5 per kg. & B_2 cost Rs. 8 per kg. Strength consideration state that the bricks contains not more than 4 kg of B_1 and minimum of 2 kg of B_2. Since the demand for the product is likely to be related to the price of the bricks. Find out graphically minimum cost of the bricks satisfying the above conditions.

Or

Solve the following L. P. problems by Simplex method :

Maximize $12 x_1 + 3 x_2 + x_3$

Subject to $10 x_1 + 2 x_2 + x_3 \leq 100$

$7 x_1 + 3 x_2 + 2 x_3 \leq 77$

$2 x_1 + 4 x_2 + x_3 \leq 80$

$x_1 \; x_2 \; x_3 \geq 0$

Unit-II

2. Explain how an assignment problem is a special case of transportation problem? Why transportation problems method cannot be used for the solution of assignment problems?

Or

A steel company has three open hearth furnaces and rolling mills, transportation cost for shipping steel from furnance to rolling mills are shown in the following table .

		Mills					
		M_1	M_2	M_3	M_4	M_5	Supply
Furnances	F_1	4	2	3	2	6	8
	F_2	5	4	5	2	1	12
	F_3	6	5	4	7	3	14
	Demand	4	4	6	8	8	0

What is optimum shipping schedule?

Unit-III

3. What is a game in a Game Theory? What are the properties of a game? What are assumptions made in theory of games?

Or

The data on the running costs per year and resales price of equipment *A* whose purchase price is Rs. 2,00,000 areas as follows :

Year	Running cost	Resale cost
1	30,000	1,00,000
2	38,000	50,000
3	46,000	25,000
4	58,000	12,000
5	72,000	8,000
6	90,000	8,000
7	1,10,000	8,000

(a) What is the optimum period of replacement?

(b) When equipment *A* is two year old, equipment *B* which is a new model for the same usage is available? The optimum period for replacement in 4 years with an average cost of Rs. 72,000 should equipment *A* changed with equipment *B*? If so, when?

Unit-IV

4. (a) What is the difference between PERT and CPM?

(b) Write notes on :

(i) Total float

(ii) Free float

(iii) Independent float

Or

Following are the information given about a project :

Activity	Immediate Predecessor	Times (in days)		
		Most Optimistic	Most Likely	Most Pessimistic
A	—	4	6	8
B	A	5	7	15
C	A	4	8	12
D	B	15	20	25
E	B	10	18	26
F	C	8	9	16
G	E	4	8	12
H	DF	1	2	3
I	GH	6	7	8

(a) Construct an arrow diagram.

(b) Determine the critical path and compute the expected project completion times.

(c) Determine the probability of completing the project is 55 days.

Unit-V

5. Determine the deterministic models of inventory controls. Discuss various problems faced in inventory control methods.

Or

Find the optimal order quantity for a product for which the price breaks are follows :

Quantity (Units)	Price per units
1 to 99	200
100 to 199	180
200 to above	160

The monthly demand of the product is 480 units the storage cost per year is 20% of the unit cost and the cost of ordering is Rs. 50 per unit order.