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Total No. of Questions :08

M.Sc.(Garment Manufacturing Technology) (2015 to 2017) (Sem.-2)

OPERATION RESEARCH

Subject Code : MSCGMT-201

Paper ID : [A2581]

Time :3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions.
2. Attempt any ONE questions from each UNIT and the fifth question can be attempted from any unit.
3. Each question carries TWELVE marks.

UNIT-I

- Q1. Define operations Research. Explain the various characteristics of OR.
- Q2. Explain the various steps involved in formulation of LPP with suitable example.

UNIT-II

- Q3. Solve the following problem graphically:

$$\text{Max } Z = -4X_1 + 3X_2$$

Sub to $X_1 - X_2 \leq -1$

$$X_1 \leq 4$$

Whereas $X_1, X_2 \geq 0$

- Q4. Solve the following LPP by Simplex :

$$\text{Max } Z = \quad X_1 + 2X_2 + X_3$$

Sub to $X_1 + X_2/2 + X_3/2 \leq 1$

$$3/2 X_1 + 2X_2 + X_3 \geq 8$$

Whereas $X_1, X_2, X_3, \geq 0$

UNIT-III

Q5. Solve the following transportation problem to maximize profit and give criteria for optimality :

Origin	Destination				Supply
	1	2	3	4	
A	40	25	22	33	200
B	44	35	30	30	60
C	38	38	28	30	140
Demand	80	40	120	60	

Q6 Find the optimal assignment schedule :

	A	B	C	D	E
M ₁	4	6	10	5	6
M ₂	7	4	--	5	4
M ₃	--	6	9	6	2
M ₄	9	3	7	2	3

UNIT-IV

Q7. Solve the following problem graphically.

Job 1		Job2	
Machine sequence	Time (Hours)	Machine sequence	Time (Hours)
A	4	B	6
B	5	A	3
C	1	C	2
D	3	F.	4
E	6	D	3
F	5	E	5

Q8. The data for a project are :

Activity	Preceding activity	Time (in weeks)		Cost (in Rs.)	
		Normal	Crash	Normal	Crash
A	—	3	2	18,000	19,000
B	—	8	6	600	1,000
C	B	6	4	10,000	12,000
D	B	5	2	4,000	10,000
E	A	13	10	3,000	9,000
F	A	4	4	15,000	15,000
G	F	2	1	1,200	1,400
H	C,E,G	6	4	3,500	4,500
I	F	2	1	7,000	8,000

- Draw a project network and find the critical path.
- If a deadline of 17 weeks is imposed for completion of the project, what activities will be crashed, what would be the additional costs and what would be the critical activities of the network after crashing?