

: નોંધ :

B. Sc. Semester. 6

૧. દરેક પ્રશ્નનો [a] અથવા [a(i)] અને [a(ii)] ૧ લખવાના રહેશે.  
 ૨. પ્રશ્ન : ૧[a] અથવા ૧[a(i)] અને ૧[a(ii)] તથા ૨[a] અથવા ૨[a(i)] અને ૨[a(ii)] ના 14 માર્ક્સ ના બદલે ૧૮ માર્ક્સ રહેશે.  
 ૩. પ્રશ્ન : ૩[a] અથવા ૩[a(i)] અને ૩[a(ii)] તથા ૪[a] અથવા ૪[a(i)] અને ૪[a(ii)] ના 14 માર્ક્સ ના બદલે ૧૭ માર્ક્સ રહેશે.  
 ૪. દરેક પ્રશ્નનો પ્રશ્ન નં ૧(b), પ્રશ્ન નં ૨(b), પ્રશ્ન નં ૩(b) તથા પ્રશ્ન નં ૪(b) (ટુંકા પ્રશ્નો) વિદ્યાર્થીએ લખવાના નથી.

Q 1 What is Linear Programming Problem? Give general Mathematical Model of Linear Programming Problem. Why it is called L.P.P. State the assumptions made in Linear Programming 14

OR

Q1 A a) What do you mean by the following terms: 6  
 (i) Feasible Solution, (ii) Basic Solution and (iii) Optimal Solution

Q1 A b) A person requires 10, 12 and 12 units of chemical A, B and C respectively for his garden. A liquid product contains 5, 2 and 1 units of A, B and C respectively per jar. A dry product contents 1, 2 and 4 units of A, B and C respectively. If the liquid product sells for Rs. 3/- per jar and dry product for Rs. 2/- per carton, how many of each should be purchased in order to minimize the cost & meet the requirements? Solve the above L.P.P. 8

Q1 B i) Dual of the dual is \_\_\_\_\_ . 1

A	Primal	C	Alternative
B	Dual	D	None of the above

ii) . Linear programming problem involving more than two variables can be solved by 1

A	Graphical method	C	Simplex method
B	Matrix minima method	D	None of these

iii) In a simplex method, a tabluae is optimal only if all the  $Z_j - C_j$  values are 1

A	Zero or negative	C	Zero
B	Negative and nonzero	D	Positive and non zero

iv) For a maximization problem, the objective function coefficient for an artificial variable is 1

A	+ M	C	Zero
B	- M	D	None of these

Q 2 What is Assignment problem? Give its mathematical formulation. Show that it is a special case of L. P. P. and T.P. Is degeneracy occurs? If yes, explain how will you resolve it? 14

OR

Q2 A a) Explain the MODI method of finding optimal solution of T.P. 8

Q2 A b) Find Initial basic feasible solutions using- 6  
 (i) North – West Corner method ,  
 (ii) Matrix minima method.

	Destination				
Source	D	E	F	G	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

Q2 B i) For maximization in TP, the objective is to maximize the total \_\_\_\_\_ : 1

A	Solution	C	Profit
B	Profit Matrix	D	None of the above

ii) An assignment problem is a special form of transportation problem where all supply and demand values equal 1

A	0	B	1	C	2	D	3
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iii) In TP, One can find the initial basic feasible solution by using \_\_\_\_\_ ? 1

A	Vogel's Approx. Method	C	Hungarian method
B	MODI Method	D	None of the above

iv) An assignment problem is consider as a particular case of transportation problem, because

A	The number of row equals columns	C	All rim conditions are 1
B	All $X_{ij} = 0$ or 1	D	All the above

Q 3 What do you mean by the following terms in Network Analysis 14

- (i) Activity (ii) Dummy Activity (iii) Successor Activity & (iv) Predecessor Activity .Give the Distinguish between CPM and PERT.

OR

Q3 A a) What is sequencing problem? State various underlying assumption of sequencing problem 7

Q3 A b) Find the sequence that minimizes the total elapsed time required to complete the following tasks. Each job is processed in the order ABC. Also find Total Elapsed time. 7

Job	1	2	3	4	5	6	7
Machine A	1	6	5	11	5	7	6
Machine B	7	8	9	4	7	8	3
Machine C	3	4	1	5	2	3	4

Q3 B i) CPM is- 1

A	Critical Project Management	C	Critical Path Method
B	Critical Path Management	D	Crash Project Method

ii) The completion of project in PERT network follows - 1

A	Uniform distribution	C	Beta distribution
B	Normal distribution	D	All the above distributions

iii) In sequencing, an optimal path is one that minimizes:

A	Elapsed time	C	Processing time
B	Idle time	D	Ready time.

Q 4

Explain giving example each of the following:

- (i) Game, (ii) Zero-Sum game, (iii) Players (iv) Saddle point and (v) Value of the game.

Explain the algebraic method of solving a Game.

OR

Q4 A a) What is replacement? State some important replacement situations.

Q4 A b) Solve the following 3 x 5 game using dominance property.

		Player B				
		1	2	3	4	5
Player A	1	2	5	10	7	2
	2	3	3	6	6	4
	3	4	4	8	12	1

Q4 B i) A machine is replaced with average running cost

A	Is not equal to current running cost,	C	If current period is greater than that of next period,
B	Till current period is greater than that of next period,	D	If current period is less than that of next period

ii) Monte Carlo simulation includes all of the following EXCEPT:

A	data collection	C	computer simulation.
B	random-number assignment.	D	analysis.

iii) For the game given the value is:

		B	
		I	II
A	I	2	3
	II	-5	5

A	3	C	-5
B	5	D	2