MCOHC-3.2

Sl.No. : **Total No. of Pages : 3**

III Semester M.Com. Degree Examination, June - 2025
(CBCS, SLM Scheme)
COMMERCE
Course - II : Quantitative Techniques

Time : 3 Hours **Max. Marks : 80**

SECTION - A

Answer any four questions. Each question carries five marks. **[4×5=20]**

Q1) What steps are required for solving an assignment problem?

Q2) State the basic characteristics of an inventory system.

Q3) What are the differences between slack and surplus variables?

Q4) Write a note on duality in LPP.

Q5) What are the importance of sequencing problem?

Q6) What are the advantages of PERT in network analysis?

SECTION - B

Answer any three questions. Each question carries ten marks. **[3×10=30]**

Q7) What is simulation? Explain the application of simulation.

Q8) Explain the essential characteristics of linear programming.

Q9) How do you solve a game when:

a) A saddle point exists, and

b) Saddle point does not exist

Q10) Consider the transportation matrix given in the figure below.

To / From	Destinations			Supply
	D1	D2	D3	
A	40	50	45	500
B	30	25	40	400
C	45	35	30	600
Demand	600	700	200	1500

Find the initial feasible solution and evaluate cost with the North - West Corner method and Vogel's Approximation method.

Q11) A company is producing a single product and is selling it through five agencies situated in different cities. All of a sudden, there is demand for a product in another five cities not having any agency of the company. The company is faced with the problem of deciding on how to assign the existing agencies to dispatch the product to needy cities in such a way that the total travelling distance is minimized. The distance between the surplus cities and deficit cities (in KM) are given in the following table :

Determine the optimal assignment schedule and assignment cost?

Surplus cities	Deficit cities				
	A	B	C	D	E
A	10	5	9	18	11
B	13	19	6	12	14
C	3	2	4	4	5
D	18	9	12	17	15
E	11	6	14	19	0

SECTION - C

Answer any two questions. Each question carries fifteen marks. **[2×15=30]**

Q12) What is a replacement problem? What are the situations which make the replacement of item necessary?

Q13) Discuss the scope and significance of quantitative techniques in modern management.

Q14) A rubber company is engaged in producing 3 different kinds of tyres A, B and C. These three different tyres are produced at the company's 2 different plants with different production capacities. In a normal 8 hrs. working day plant 1 produces 50, 100 and 100 tyres of A, B and C respectively. Plant 2 produce 60, 60 and 200 tyres of type A, B and C respectively. The monthly demand for tyre A, B and C is 2,500, 3,000 and 7,000 units respectively. The daily cost of operation of plant 1 and 2 is ₹ 2,500 and ₹ 3,500 respectively. Find the minimum number of days of operation per month at 2 different plants to minimize the total costs while meeting the demand using LPP.

Q15) A project has the following characteristics.

Activity	Most Optimistic Time	Most Pessimistic Time	Most Likely Time
1-4	3	9	27
1-3	3	6	15
1-2	6	12	30
4-5	1	4	7
3-5	3	9	27
3-6	2	5	8
5-6	6	12	30
2-6	4	19	28

a) Draw a PERT Network.
b) Find the Critical Path.
c) Find early and late start, early and late finish time estimates.

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