

**Sree Chaitanya Mahavidyalaya**  
**M.Com. (Semester-2) Examination-2021**  
**Quantitative Techniques**  
**Paper-COMPCOR09T**

**Full Marks-40****Time-2 Hours****Group – A****1. Answer any five questions****5x2=10**

- a) Define a non-degenerate basic feasible solution of a L.P.P.
- c) State the methods for obtaining a basic feasible solution to a Transportation problem.
- e) Define a Pay-off matrix of a game.
- d) Explain the terms 'degeneracy' and 'optimality'.
- e) What is VED analysis?
- f) In the context of Network Analysis, name the different types of floats.
- g) In the context of Network Analysis, what do you mean by an event?
- h) State the maximin-minimax principle to solve a game.

**Group – B****Answer any two questions****2x5=10**

2. Discuss the objectives of inventory control.
3. Find the optimal economic order quantity for a product having the following characteristics:

Annual demand 2400 units

Ordering cost Rs. 100.

Cost of storage 24% of the unit cost.

Price break:

Quantity (Q)	unit cost (Rs.)
$0 \leq Q < 500$	10.00
$500 \leq Q$	9.00

4. State the Fundamental theorem of duality. Prove that the dual of a dual is the primal itself.
5. A Tailor has purchased 100 mtr & 150 mtr of cotton & linen cloths respectively to manufacture shirts & pants in a month. He requires 1.5 mtr of cotton cloths & 1 mtr of linen cloths to manufacture a shirt and 2.2 mtr of cotton cloths & 0.5 mtr of linen cloths to manufacture a trouser. He sells a shirt for Rs. 250/- and a trouser for Rs. 500/- in the market. Formulate the LPP to maximize the profit.

**Group-C****Answer any two questions****2x10=20**

6. Explain the distinction between PERT and CPM.
7. A manufacturing company has three factories and five depots. The necessary data regarding cost (in rupees), factory capacities and depot requirements are given below:

<i>Depots</i>	<i>Factory-1</i>	<i>Factory-2</i>	<i>Factory-3</i>	<i>Depot requirements</i>
<i>A</i>	50	40	80	800
<i>B</i>	30	50	40	400
<i>C</i>	80	70	40	500
<i>D</i>	60	70	60	400
<i>E</i>	60	70	60	600
<i>Factory capacity</i>	1100	900	700	

Solve the Transportation problem and find the optimal cost.

8. a) Solve the following (2X2) zero-sum game using mixed strategies:

		Player-B	
		B <sub>1</sub>	B <sub>2</sub>
Player-A	A <sub>1</sub>	2	4
	A <sub>2</sub>	3	2

- b) Find the dual of the following L.P.P:

$$\begin{aligned}
 &\text{Minimize } Z = x_1 - 4x_2, \\
 &\text{subject to conditions: } x_1 + 2x_2 \geq 12, \\
 &\quad 3x_1 - 5x_2 \leq 6; \\
 &\quad x_2 \geq 0, \quad x_1 \text{ is unrestricted in sign.}
 \end{aligned}$$

(5+5)

9. The following table gives the activities in a construction project and other relevant information.

Activities	1-2	1-3	2-3	2-4	3-4	4-5
Duration	20	25	10	12	6	10

- Draw the network for the project,
- Compute earliest event time and latest event time,
- Indicate the critical path and find out the total project duration,
- Find total, free and independent float for each activity.
- Identify the critical activities.

**Send your answer scripts to this e-mail**

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