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1410N718

Candidate's Seat No :_____

B.Sc. Sem.-6 (Rep) Examination

SE-311

Mathematics (D)

(O.R.)

Time : 2-30 Hours] **October-2025** **[Max. Marks : 70**

Instructions : (1) All questions are compulsory.
(2) Figures to the right indicate full marks of the questions.

Q-1. (a) Describe EOQ (Economic Order Quantity) model with constant rate of Demand 09

(b) The demand of a certain item is 16 units per period. Unsatisfied demand causes a shortages cast of ₹ 0.75 per unit per short period. The cost os initiating purchasing action is ₹ 15 per purchase and holding cost is 15% of average inventory valuation per period. Item cost is ₹ 8 per unit. Find the minimum cost and purchase quantity. 09

OR

(a) Describe EOQ model with Shortages. 09

(b) A contractor has to supply 10,000 bearings per day to an automobile manufacturer. He finds that when he starts a production run, he can produce 25,000 bearings per day. The cost of holding a bearing in stock for one year is ₹ 2 and the set-up cost of a production run is ₹ 1,800. How frequently production run be made? 09

Q-2. (a) Explain the basic difference between PERT and CPM. 09

(b) Draw the project networks for the following activities and their predecessors. 09

Activity:	A	B	C	D	E	F	G	H	I	J	K	L
Predecessor:	-	-	-	A	A	E	B	B	D, F	C	H, J	G, I, K
Duration:	2	3	2	3	4	4	7	5	4	8	2	4

Find critical path and project completion time.

OR

(a) Explain the terms in brief: (i) Events, (ii) Activities, (iii) Network diagram. 09

(b) Draw the project network for the following activities and their predecessors. 09

Activity:	A	B	C	D	E	F	G	H
Predecessor:	-	-	A	B	A	C, D	C,D,E	F
Duration:	3	6	4	3	4	5	3	1

(i) Find critical path. (ii) Compute total float, free float and independent float.

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Q-3. (a) Explain the principle of dominance in game theory and use it to reduce the size of game as far as possible: 09

		Player B			
		B_1	B_2	B_3	B_4
Player A	A_1	-1	2	3	0
	A_2	-4	-1	-1	0
	A_3	-1	1	1	-4
	A_4	4	-1	2	-7

(b) Solve the following games: 09

(i)

		Player B			
		B1	B2	B3	B4
Player A	A1	-5	2	1	4
	A2	5	6	3	7
	A3	4	0	1	-3

(ii)

		Player B		
		B_1	B_2	B_3
Player A	A_1	2	3	-2
	A_2	3	2	6

OR

(a) Explain the terms in brief: 09

(i) Pure Strategy, (ii) Minimax Principle, (iii) Pay-off matrix.

(b) Solve the following game : 09

		Player B		
		B_1	B_2	B_3
Player A	A_1	3	1	1
	A_2	1	1	5
	A_3	1	4	1

Q-4. Attempt any **Eight** in short: 16

(1) Write Types of Inventory.

(2) Define Inventory holding cost and Carrying cost.

(3) Write down full form of PERT and CPM.

(4) Write down the EOQ formula EOQ model with finite replenishment rate.

(5) Define Dummy Activity.

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(6) Define Free float and Total float.

(7) Explain Earliest and Latest finish time of an activity.

(8) Define Critical activity and Critical path.

(9) Define Two-person zero sum game.

(10) Find the range of values of p and q that will render the entry (2, 3) a saddle point for the game :

		Player B		
		B_1	B_2	B_3
Player A	A_1	2	4	5
	A_2	p	10	6
	A_3	6	4	q

(11) Define: A fair game with illustration.

(12) List any two methods which are used to solve the games without saddle point.

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