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2803E1396

Candidate's Seat No : _____

B.Sc. Semester-5 Examination

SE 305

Statistics (Bus. Stat)

March-2024

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

Instructions:

1. All questions are compulsory and carry equal marks.
2. Figures to the right indicate full marks of the questions/sub-questions

Q. 1 a Explain Markov chain with illustration. **09**

b Define: Transition probability and Transition probability matrix **09**

For the following transition matrices, find 2-step transition probability

0.2	0.8
0.6	0.4

0.3	0.7	0
0	0.4	0.6
0	0	1

OR

a In usual notations, State and prove the Chapman Kolmogorov equation for discrete markov chain. **09**

b Define different states of markov chains with appropriate examples, used in markov chain. **09**

Q. 2 a Define term: Decision Theory, actions (or strategies), events, Decision under risk, payoff matrix. **09**

State importance of Decision theory.

b Describe the procedure of Minimax Principle with illustration. **09**

OR

a State different principles used in decision theory. Explain Hurwiscz Principle (criterion) with illustration **09**

b For the following pay-off matrix, determine the most suitable strategy using **09**

1) Maximin 2) Maximax 3) Minimax 4) Horvitz 5) Laplace principles ($Use\ \alpha = 0.4 for\ Hurwiscz\ Principle$)

Events	Strategy			
	A1	A2	A3	A4
E1	14	10	7	2
E2	9	2	8	12
E3	1	11	3	10

Q. 3 a Write a brief note on simulation and simulation process. **09**

b Give reasons for using simulation in real life situations **09**

OR

a Explain deterministic and stochastic simulation models, citing one example of each. **09**

b State *simulation* method of generating random numbers. **09**

P.T.O

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Q. 4	**Answer ANY EIGHT (08) from following**	**16**
1	Give one application of Markov Chain.	
2	Define n step transition probability.	
3	Give difference between decision under uncertainty and decision under uncertainty.	
4	Give another name for optimistic principal.	
5	When optimization techniques fail to solve a problem, simulation is a better approach. Do you agree?	
6	What is the role of E. V. P. I in decision theory?	
7	Simulation is a descriptive technique. Do you agree?	
8	There are _____ phases are involved in Simulation technique. (Select correct option: 1, 2, 4, none)	
9	State the role of simulation technique in Inventory management.	
10	What is Stochastic process?	
11	What is the use of E. M. V?	
12	What do you mean by α used in Hurwiscz Principal?	

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