0302E1343

Candidate's Seat No :_____

MSc Sem.-1 Examination

402

Statistics

February-2025

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

Q-1 (A):Differentiate between probability theory and measure theory. **[07]**

Q-1 (B):State and prove Baye's Theorem applying measure theoretic concept. **[07]**

=OR=

Q-1 (A):What do you mean by limit superior? Prove that P $[limsup A_n] \geq lim\ sup$ P $[A_n]$. **[07]**

Q-1 (B):State and prove Decomposition Theorem. **[07]**

Q-2 (A): State and prove Holder's Inequality. **[07]**

Q-2 (B): State and prove Chebyshev's Inequality. **[07]**

=OR=

Q-2 (A): State and prove Minkowsky's Inequality. **[07]**

Q-2 (B):State and prove Liapounov's Inequality. **[07]**

Q-3 (A):State and prove Chebyshev's WLLN. **[07]**

Q-3 (B): State and prove Kolmogorov's SLLN. **[07]**

=OR=

Q-3 (A): State and prove Lindberg and Levy's CLT. **[07]**

Q-3 (B):State and prove Kolmogorov's SLLN applying Hajek Renyi Inequality. **[07]**

Q-4 (A):Derive a steady state solution to birth and death process. **[07]**

Q-4 (B):Mention the axioms of the Poisson Process. Explain Poisson Process in detail. **[07]**

=OR=

Q-4 (A):Derive the Chapman Kolmogorov Equation. **[07]**

Q-4 (B):Define Stochastic Process and explain its classification. **[07]**

(P.T.O)

Q-5: Answer in short: (any 7) **[14]**

1. Define Sigma Ring.
2. Define Sigma Field.
3. Define Sample Space. Give an example of countable and uncountable sample space.
4. State Holder's Inequality.
5. State Kinchen's WLLN.
6. State Kolmogorov's Inequality.
7. Define Borel Measurable Function.
8. Define Independent Variables using Index Set.
9. Define Stochastic Process and give an example.
10. State any two classifications of stochastic processes.
11. Define Stationary Process and give an example.
12. Define Evolutionary Process and give an example.

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