B.Sc. DEGREE EXAMINATION,NOVEMBER 2019
III Year VI Semester
Stochastic Processes

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. What is meant by stochastic process?
2. Define time space with an example
3. Give an example for a Markov Process.
4. What is Transition Probability Matrix?
5. Define an Irreducible Markov chain
6. Define periodicity of a markov chain
7. List out any two properties of Poisson process.
8. Define Yule-Fury process
9. What is meant by Birth process
10. When are two states said to be accessible from each other?
11. What is the need for queuing theory
12. Define Transient state.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Explain the process with stationary independent increments.
14. Discuss in detail any two applications of stochastic modeling.
15. Discuss in detail the higher order transition probabilities with suitable illustration
16. State and prove the theorem used to find the stationary probability distribution of the Markov chain.
17. If a state is recurrent show that any state communicating with it is also recurrent.
18. State and prove the additive property of Poisson process.
19. Explain the elements of queuing model.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Explain the classification of the stochastic process based on time and state space with examples.
21. State and prove Chapman-kolmogrov equation for a markov chain.
22. Explain Poisson Process with illustration.
23. Explain birth and death process with illustration.
24. Explain the various steady state measure of M/M/1:∞/FIFO,

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