1. What is the difference between an R.V and a random process?
2. What is the difference between random sequence and random processes?
3. What is a discrete random sequence? Give an example.
4. What is a continuous random sequence? Give an example.
5. What is a continuous random process? Give an example.
6. What do you mean by the mean and variance of a random process?
7. Define a strict-sense stationary process and give an example.
8. Define a k^{th} order stationary process. When will it become a SSS process?
9. What is the first order stationary process?
10. Give an example of stationary random process and justify your claim.
11. State means ergodic theorem.
12. State the sufficient conditions for the mean ergodicity of a R.V {X(t)}.
13. Give an example of a WSS process which is not mean-ergodic.
14. When is a random process said to be correlation ergodic?
15. When is a random process said to be distribution ergodic?
16. When is a poisson process said to be homogenous?
17. Define a random (stochastic) process. Explain the classification of random process. Give an example to each class.
18. Compare and contrast power spectral density (PSD) and cross-spectral density.
19. Explain the significance of spectral characteristics in signal processing, system analysis, and predictive modeling.
20. Analyze the effectiveness of Fourier Transform in analyzing frequency components of a signal.
21. Given a set of input random signals, calculate the mean and variance of each signal.
22. Summarize the key concepts of random signal response in linear systems in your own words.
23. How does the principle of superposition apply when analyzing the output of linear systems with multiple random signals as inputs?
24. Explain the concept of convolution and its role in determining system output.
25. How does the mean value of a system's response provide insights into its overall performance?
26. How does the mean value of a system's response provide insights into its overall performance?
27. Investigate the cross-correlation function between input and output signals to understand how variations in the input affect the output.
28. Compare and contrast the applications of mean value and mean-squared value in analyzing system responses.