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Question Paper Code: 34404

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Fourth Semester

Electronics and Communication Engineering

01UEC404 – SIGNALS AND SYSTEMS

(Regulation 2013)

Duration: 1:45 hour

Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. Define step signal.
2. Differentiate between deterministic and random signal.
3. State Dirichlet's condition.
4. Explain about Parseval's theorem.
5. State and prove the differentiation property of Laplace transform.
6. State the condition for stability.
7. Prove the time shifting property of discrete time Fourier transform.
8. What is aliasing?
9. What is the z-transform of $\delta(n+k)$?
10. List the advantages of the state variable representation of a system.
11. Find the impulse response of two LTI systems when it is connected in parallel?
12. Prove the time shifting property of discrete time Fourier transform.
13. What is aliasing?

14. State the properties of ROC in Z transform.
15. List the advantages of the state variable representation of a system.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Sketch the following type of signals: (i) $u(t-2)$, (ii) $u(t-2)$, (iii) $-3 u(t-2)$ and (iv) $u(-t+1)$. (10)
17. Find the exponential Fourier series for the halfwave rectified sinewave with amplitude A and $T = 2\pi$. (10)
18. Obtain the inverse Laplace transform of the function $X(s) = 1/(s^2+3s+2)$, ROC: $-2 < \text{Re}\{s\} < -1$. (10)
19. List out and explain any four properties of DTFT. (10)
20. Find the impulse response and step response for the following system $Y(n) - 3/4 y(n-1) + 1/8 y(n-2) = x(n)$. (10)