



Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (EE/EEE) (Sem.-4)

SIGNALS AND SYSTEMS

Subject Code : BTEE-404-18 M.Code : 77609

Date of Examination : 09-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Define linearity property of Fourier transform.
- b) State sampling theorem.
- c) What is the periodicity of the signal?
- d) Differentiate the unit step signal from unit impulse signal.
- e) What are state equations? Write the mathematical expressions.
- f) Differentiate between the Fourier series and Fourier transform.
- g) Explain energy and power signals with examples.
- h) What is the function of filtering in signals and systems?
- i) Explain any two applications of signals and systems in engineering and sciences,
- j) Write the Laplace transform of unit impulse signal, draw its waveform.

SECTION-B

2. State and explain the Parseval's theorem of discrete time Fourier transform.
3. Derive an expression for the transfer function of zero order hold.
4. Explain the properties of Z-transform.
5. Explain any four system properties with examples.
6. Derive the expression for the convolution integral.

SECTION-C

7. a) Let the impulse response of a LTI system be $h(t) = \delta(t - a)$. Determine the output of this system in response to any input $x(t)$.
b) Explain briefly the classification of the signals, with expressions and waveforms.
8. Find the inverse Fourier transform of $X(j\omega) = (5j\omega + 12) / ((j\omega)^2 + j\omega + 6)$.
9. Write short notes on:
 - a) Aliasing and its effects
 - b) State transition matrix and mathematical expression.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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