

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Civil Engg./Computer Science Engg.) (Sem.-6)

SIGNALS AND SYSTEMS

Subject Code : BTEC-403-18

M.Code : 79383

Date of Examination : 14-07-22

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) State Dirichlet's conditions for Fourier series.
- b) Define Fourier Transform.
- c) What is Region Of Convergence (ROC)?
- d) Define Fourier series.
- e) Define periodic and aperiodic signals.
- f) Define poles and zeros of a transfer function.
- g) Define standard deviation.
- h) Define combinational probability.
- i) Define causality and stability of a system with an example for each.
- j) Sketch the following signal:

$$u(t) - u(t-2)$$

SECTION-B

2. Differentiate energy signals and power signals.
3. Check whether the given system is stable or dynamic, linear or non-linear, causal or non-causal, time-invariant or time-variant

$$y(n) = x(n) x(n - 1)$$

4. Find the Fourier Transform of $\delta(\omega)$.
5. Determine Z-transform and ROC of the finite duration signal $X(n) = \{2, -1, 3, 0, 2\}$.
6. State and proof sampling theorem.

SECTION-C

7. Define Laplace transform. Find the Laplace transform of $e^{-at}u(t)$.
8. Find the convolution of the following signals :
 $x[n] = \alpha^n u[n]$, $h[n] = \beta^n u[n]$, $0 < \alpha < 1$
9. Discuss the properties of DTFT in detail.

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.