University of Engineering and Management, Kolkata
1st Term Examination, September, 2023
Programme Name: B.Tech in CSE / CSE (AIML) / CSE (IOT, CYS, BCT)
Semester: 5th
Course Name: Signals & Systems
Course Code: ESCCSE501

Full Marks: 30 **Date: 14th September, 2023** **Time: 3.30 PM – 4.30 PM**

Part - A
Attempt 5 questions
Each question carries 2 Marks (2 X 5)

1.A. Define unit step signal with diagram.

Or

1.B. Describe energy and power signals.

2.A. Draw the following signal
$x(n) = u(n-1) - u(n-4)$

Or

2.B. Judge whether the signal is periodic or not:
$\boxed{x(n) = 5\cos(0.2\pi n)}$

3.A. Draw the waveform of $f(n) = u(n) - u(n-2)$

Or

3.B. Judge the system described below is static or not:
$y(t) = 5\cos[x(t+2)]$

4.A. Define step response of a system.

Or

4.B. Compose the expression of continuous convolution

5.A. Formulate even and odd signals with help of examples.

Or

5.B. Formulate the condition for BIBO stability.

Part - B
Attempt 2 questions
Each question carries 5 Marks (5 X 2)

6.A. Formulate if the following system is causal or not: $y(n)=x(n)+1/x(n-1)$

Or

6.B. Determine the following system is linear or not: $y(t)= e^{x(t)}$

7.A. Describe various properties of convolution.

Or

7.B. State the properties of the LTI system

Part - C
Attempt 1 question
Each question carries 10 Marks (10 X 1)

8.A. Draw the waveforms of the following expression step size
$f_1(t) = u(2-t)$
$f_2(t) = r(n)$

Or

8.B. Rewrite the trigonometric Fourier series representation of a signal and explain its properties

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