



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Vellore – 632014, Tamil Nadu, India

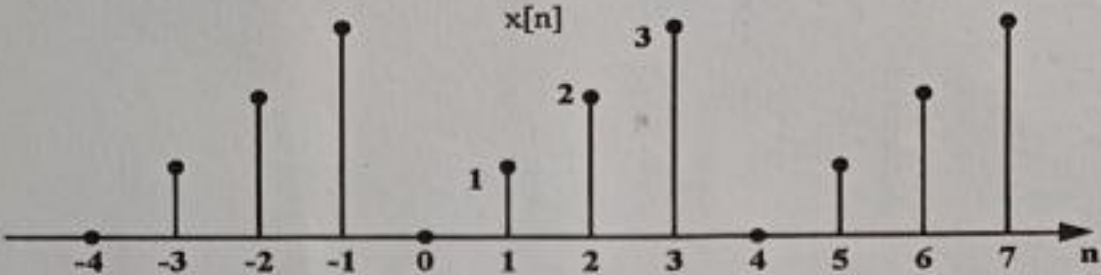
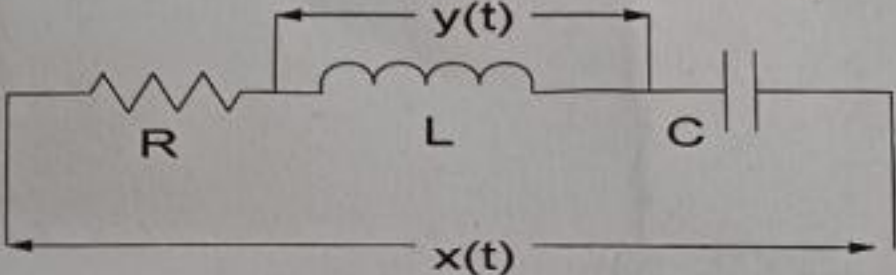
School of Electrical Engineering

Fall Semester 2023-24, Continuous Assessment Test - 2

SLOT: B2+TB2

Programme Name & Branch : B.Tech & EEE, EIE Course Code: BEEE204L
 Course Name : Signals and Systems
 Faculty Members : Dr. Maddela Chinna Obaiah, Dr. Yuvapriya T
 Class Number(s) : VL2023240104112, VL2023240102905
 Date of the Examination : 16-10-2023
 Duration : 90 minutes Max. Marks : 50

General instruction(s): Answer all questions.

Q. No	Question	Marks
1.	Consider the given discrete time sequence $x[n]$. Determine the exponential Fourier series coefficients and sketch the magnitude and phase plots w.r.t to harmonic family k . 	10
2.	Determine the Fourier Transform of the given using properties. a) $x(t) = \delta(t+2) + \delta(t+1) + \delta(t-1) + \delta(t-2)$ b) $x(t) = \frac{d^2}{dt^2} y(t-2)$	10
3.	Find the Fourier Transform of the given signals. a) $x(t) = 1 + \sin\left(6\pi t + \frac{\pi}{6}\right)$ b) $x(t) = 2e^{-3t}u(t) + 4[u(t+3) - u(t-3)]$	10
4.	The RLC series circuit with $R = 5 \text{ ohms}$, $L = 1 \text{ H}$, $C = \frac{1}{6} \text{ F}$ is given as  a) Find the frequency response of the circuit. b) What is the output response of the circuit if $x(t) = e^{-2t}u(t-2)$	10
5.	a) Find the DFT of the given signal $x[n] = \left(\frac{1}{4}\right)^{n-2} u(n-2)$ b) Find the Inverse discrete Fourier transform of the signal $X(e^{j\Omega}) = \frac{3 - \frac{5}{4}e^{-j\Omega}}{\frac{1}{8}e^{-j2\Omega} - \frac{3}{4}e^{-j\Omega} + 1}$	10

