$I = \int t e^{-j\omega t}$

$= t\frac{e^{-j\omega t}}{-j\omega} - \int \frac{e^{-j\omega t}}{(-j\omega)}$

$\int = \int (1+t)e^{-j\omega t}$

$(1+t)\frac{e^{-j\omega t}}{-j\omega} - \int e^{-j}$

REG.NO.:

VIT

Vellore Institute of Technology

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

SLOT: F1+TF1

41.5/50

NAME OF THE SCHOOL
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

Programme Name & Branch	**: B.Tech -EEE, EIE**
Course Code and Course Name	**: BEEE204L Signals and Systems**
Faculty Name(s)	**: Dr. Vijaya Priya R & Dr. Yuvapriya T**
Class Number(s)	**: VL2024250101255, VL2024250101256**
Date of Examination	**: 18.10.2024 & 2.00 PM -3.30 PM**
Exam Duration	**: 90 minutes**

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes

  C02 - Apply convolution integrals and convolution sums to obtain response of LTI systems.

  C03 - Apply frequency domain techniques to obtain steady state response of the continuous and discrete time LTI system.

Q. No	Question	M	CO	BL
1.	Determine and sketch the convolution of the following two signals $x(t) = \begin{cases} t+1; 0 \le t \le 1 \\ 2-t; 1 < t \le 2 \\ 0; otherwise \end{cases}$ $h(t) = \delta(t+2) + 2\delta(t+1)$	10	C02	3
2.	Consider the signal $g(t) = \begin{cases} 1; \lvert t\rvert < T_1 \\ 0; T_1 < \lvert t\rvert < \frac{T_1}{2} \end{cases}$ with T_1=1 and the fundamental period 4. Find the Fourier Series coefficients of the signal $\{g(t-1) - 0.25\}$ for one cycle.	10	C03	2
3.	For the Fourier Series coefficient $a_k = \frac{\sin\left(\frac{3k\pi}{2}\right)}{k\pi} e^{-jk\pi}$ with T=8, find $x(t)$.	10	C03	2
4.	For the impulse response $h(t) = \begin{cases} 0.5, 2 \le t \le 5 \\ 0, otherwise \end{cases}$ and the response $y(t) = \begin{cases} 1, -5 \le t \le -2 \\ 0, otherwise \end{cases}$ determine the input $x(t)$ using Fourier Transforms.	10	C03	3
5.	Determine the Fourier Transforms of the following signal $x[n] = \cos(\Omega_0 n) + \sin(\Omega_0 n)$	10	C03	2

$H(j\omega) = \frac{Y(j\omega)}{X(j\omega)}$

$1 < |t| < \frac{1}{2}$

$-\frac{1}{2} < t < \frac{1}{2} = 0$

$1 < |t|$

$t > 1 \quad t < -1$

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