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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Midterm Examination, Fall – 2025

Course Code: EEE-0714-217 | Course Title: Continuous Signals & Linear Systems | Teacher's Initial: MFI

Section: A, B, C, D, E | Level-Term: L2-T1 | Time: 1.5 Hours

Full Marks: 25 | Exam Date: October 09, 2025

Answer all the following Questions

Q1. A continuous-time signal x(t) is shown in Fig. 1. **Sketch** and **label** each of the following signals. (a) 0.5x(t); (b) x(2t); (c) x(t+2); (d) x(t) – 2. CO-1 C(3) 5

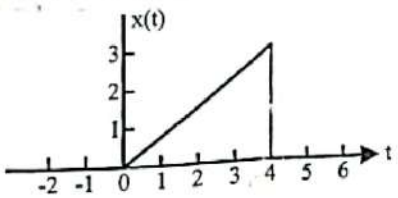


Fig. 1

Q2. **Identify** whether or not each of the following signals is periodic. If a signal is periodic, **find** its fundamental period. (a) $x(t) = cos\frac{\pi}{2}t + sin\frac{\pi}{4}t$ (b) $x(t) = cost + sin\sqrt{2}t$. CO-1 C(2) 5

Q3. **Identify** whether the following signals are energy signals, power signals, or neither. (a) $x(t) = e^{-at}u(t)$, $a > 0$; (b) $x(t) = tu(t)$. CO-1 C(2) 5

Q4. The input $x(t)$ and the impulse response $h(t)$ of a continuous time LTI system are given by $x(t) = u(t)$, $h(t) = e^{-at}u(t)$, $a > 0$. **Compute** the output $y(t) = h(t) * x(t)$. CO-1 C(3) 5

Q5. The continuous-time system shown in Fig. 2 consists of two integrators and two scalar multipliers. **Write** a differential equation that relates the output $y(t)$ and the input $x(t)$. CO-1 C(2) 5

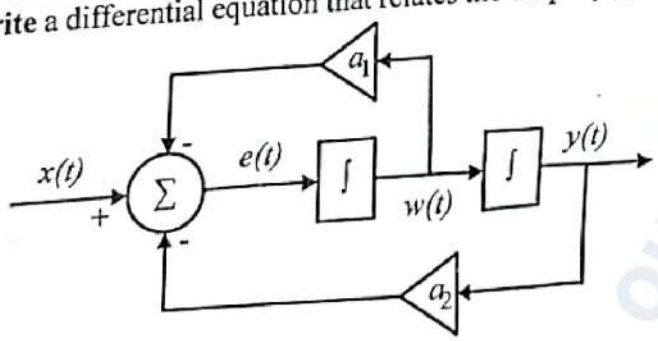


Fig. 2