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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Mid-Term Examination, Spring – 2025

Course Code: 0714 – 217 | Course Title: Continuous Signal and Linear Systems

Section: A, B, C | Level-Term: L2-T1 | Teacher's Initial: SRC, SRH, BS

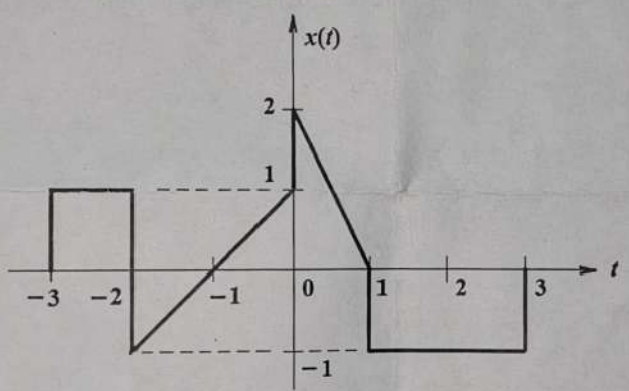
Full Marks: 25 | Exam Date: March 19, 2025 | Time: 1.5 Hours

Answer any 2 (Two) questions from Questions Q1 to Q3

Q1. Consider a continuous-time signal shown in the following Figure. **Illustrate** and **label** each of the following signals. CO-1 C(2) 10

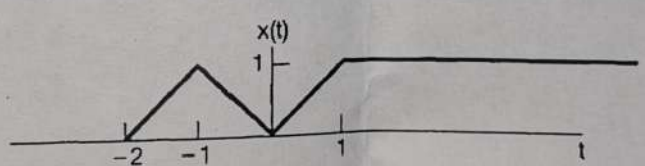
(a) $x(t-1)$ (b) $x(1-t)$ (c) $x(2t+1)$

(d) $x\left(1-\frac{t}{2}\right)$ (e) $x(t)\left[u(t+1)-u(t-1)\right]$ **(1 + 1 + 2 + 3 + 3 = 10)**

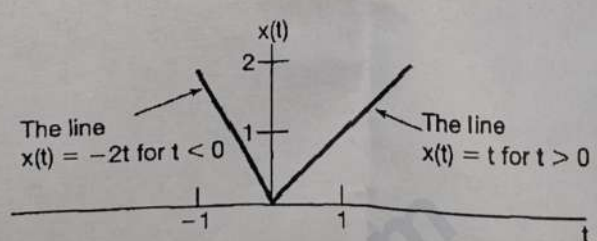


Q2. Graphically **determine** and sketch the even and odd parts of the following signals. CO-1 C(2) 10

(a)



(b)



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Q3. The trapezoidal pulse $x(t)$ is defined as CO-1 C(2)

$$x(t)=\begin{cases} t-5, & -5\le t\le -4 \\ 1, & -4\le t\le 4 \\ 5-t, & 4\le t\le 5 \\ 0, \text{ otherwise} \end{cases}$$

Determine the values of P_{av} and E_{∞} of the signal $x(t)$.

Answer any 1 (One) question from Questions Q4 and Q5

Q4. Determine the even and odd components of the following signal: CO-1 C(2)

$$x(t)=1+t\cos(t)+t^3\sin(t)\cos(t)$$

Q5. Determine whether the following signal is periodic. If the signal is periodic, find its fundamental period. CO-1 C(2)

$$x(t)=e^{j\left(\frac{\pi}{4}t+3\right)}$$
