

Cover Sheet

Test Duration: 75 minutes.

Coverage: Chaps. 1,2

Open Book but Closed Notes.

One 8.5 in. x 11 in. crib sheet

Calculators NOT allowed.

This test contains **TWO** problems.

All work should be done on the sheets provided.

You must show ALL work or explain answer for each problem to receive full credit.

Plot your answers on the graphs provided.

WRITE YOUR NAME ON EVERY SHEET.

Prob. No.	Topic(s)	Points	No. of Parts
1.	Continuous Time Signals and System Properties	50	5 parts (a)-(e)
2.	Discrete Time Signals and System Properties	50	4 parts (a)-(d)

$$\begin{aligned} y_1(t) = \{u(t) - u(t - T_1)\} * t\{u(t) - u(t - T_2)\} &= \frac{t^2}{2} \{u(t) - u(t - T_1)\} \\ &+ \left(T_1 t - \frac{T_1^2}{2}\right) \{u(t - T_1) - u(t - T_2)\} \\ &+ \left(-\frac{t^2}{2} + T_1 t + \frac{T_2^2 - T_1^2}{2}\right) \{u(t - T_2) - u(t - (T_1 + T_2))\} \end{aligned} \quad (1)$$

$$\begin{aligned} \{u(t) - u(t - T_1)\} * [-(t - T_2)\{u(t) - u(t - T_2)\}] &= \left(-\frac{t^2}{2} + T_2 t\right) \{u(t) - u(t - T_1)\} \\ &+ \left(-T_1 t + \frac{2T_1 T_2 + T_1^2}{2}\right) \{u(t - T_1) - u(t - T_2)\} \\ &+ \left(\frac{t^2}{2} - (T_1 + T_2)t + \frac{(T_1 + T_2)^2}{2}\right) \{u(t - T_2) - u(t - (T_1 + T_2))\} \end{aligned} \quad (2)$$

$$y_2(t) = \{u(t) - u(t - T_1)\} * [-(t - T_2)\{u(t) - u(t - T_2)\}] = y_1(-(t - (T_1 + T_2))) \quad (3)$$