Arab Academy for Science and Technology & Maritime Transport
College of Engineering & Technology
Electronics and Communications Dep.

5^{th} term Electronics & Communications

EC321- Communication Theory

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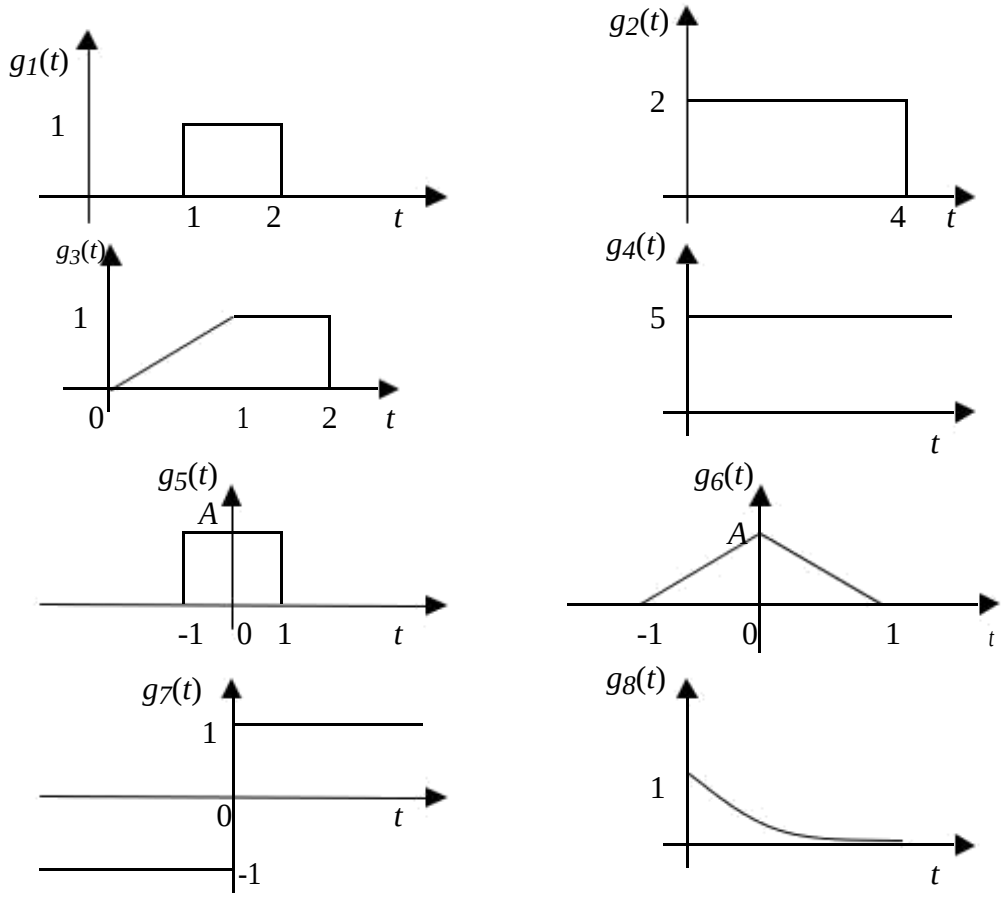
Sheet # 1

1. Represent mathematically the following signals

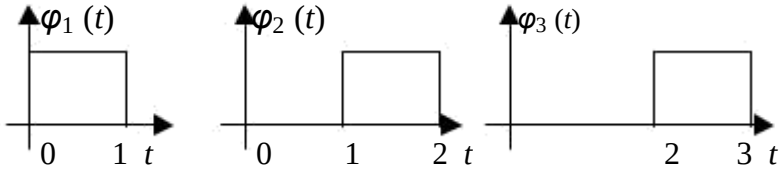


2. Sketch the following signals

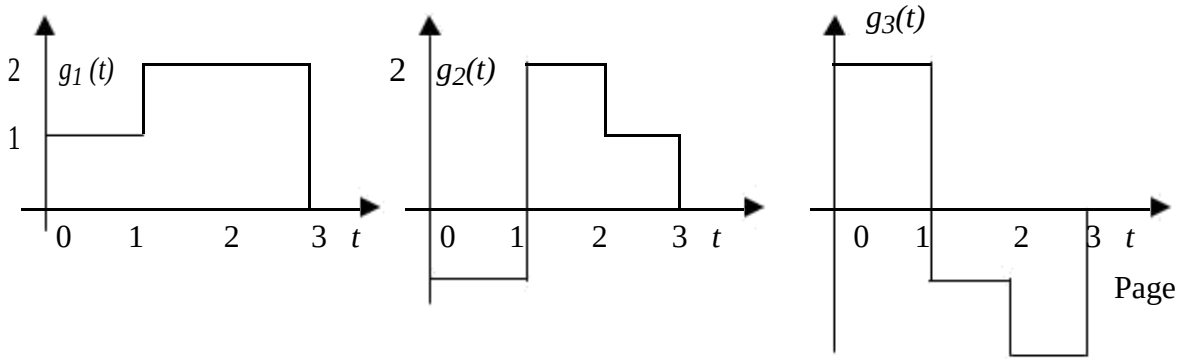
a) $g_1(t) = \varphi_1(t) + \varphi_2(t) + \varphi_3(t)$

b) $g_2(t) = \varphi_1(t) + 2\varphi_2(t) - 3\varphi_3(t)$

c) $g_3(t) = 2\varphi_1(t) - \varphi_2(t) + 4\varphi_3(t)$



3. Represent the following signals in terms of $\{\varphi_i(t)\}_{i=1}^{3}$ shown in Problem 2



4. **Express the following signals in terms of u (± $t-to$). Sketch each expression to verify the results.**
    a) u (- t)
    b) t u (- t)
    c) u (- t + 2)
    d) (t - 2) u (- t + 2)
    e) (2 - t) u (- t + 2)

5. **Express the following functions in the general form of the unit step function u (± $t-to$).**
    a) u (2 t + 6)
    b) u (-3 t + 6)
    c) u (t/3 + 1)
    d) u (t/3 - 1/2)