

ELECTRICAL ENGINEERING DEPARTMENT
EE 550-01 LINEAR CONTROL SYSTEM
Second Semester 2004/2005

HW

1

February 28, 2005
Due Date: March 08, 2005

1. Are the following systems with or without memory, casual or non casual:

- a) $y(t) = 5 u(t)$
- b) $y(t) = \sin u(t)$
- c) $y(t) = \sin u(t) + \sin u(t-1)$
- d) $y(t) = \sin u(t) + \sin u(t+1)$
- e) $y(t) = \sin t u(t)$
- d) $y(t) = \sin t u(t-1)$

2. Which of the systems in Question # 1 are linear? Show your work.

3. For the second-order digital filter shown below, write:

- (a) The state of space model,
- (b) The transfer function between $u(k)$ and $y(k)$

