EE 561: Digital Control Systems

Spring 2017

Quiz # 3

Time: 20 min

Name: _____

Roll #: _____

Question # 1   (10 marks)

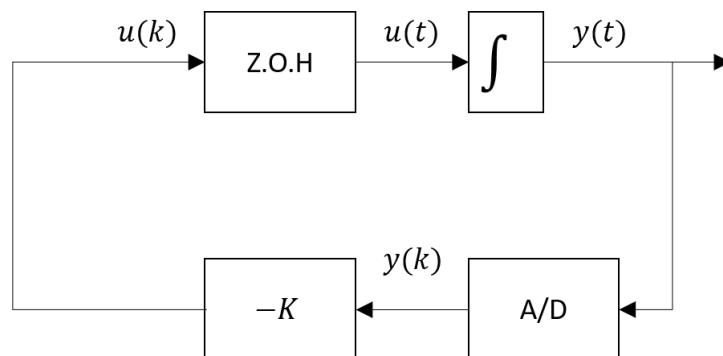Consider the following sampled-data system for regulating the continuous-time integrator (all variables are scalar)

Figure 1: Sampled data system for Question 1.

(a) 3 marks

Write down a state space representation of the continuous-time plant. Assume $x(t) = y(t)$.

(b) 4 marks

Determine the state space representation of the discrete-time system.

(c) 3 marks

What value of K should be selected in order to get a deadbeat response? (Remember a deadbeat response is one where all closed-loop poles are at zero).