**A BRIEF INTRODUCTION TO “SIMULINK” IN MATLAB**

* 1. **The Continuous Domain**

1. Open-Loop Mode:

Simulate the following continuous transfer function in open-loop mode, for a time-period of 50 sec and use “scope” to visualise the input and output signals:

Use a unit-step as the excitation signal.

1. Closed-Loop:

For the same excitation signal as a reference target, simulate the above system now in closed-loop mode for the same time-period, and use “scope” to visualise the target, input and output signals. Use the “to Workspace” blocks to save the target, input and output data. Using this data, plot the various signals using the command “plot” in the MATLAB-command space.

* 1. **The Discrete Domain**

1. Open-Loop Mode:

Use the command “c2dm” with a sampling interval of **Ts = 0.1541 sec** to find . Using this digital transfer function, simulate the behaviour of the system for a time-period of 5 sec. Use a unit-step as excitation signal. Compare the digital output with that of 1.1a.

1. Closed-Loop:

Repeat the same process of simulation as the one in 1.1b for and compare the digital output with that of 1.1b.

Compare the output from 1.2b to that of the following closed-loop Simulink configuration that uses a holding device (a **zero-order hold**):you will find that both signals are identical because the command “c2dm” is equivalent to taking the z-Transform of the zero-order hold preceding *G(s)*.

