

BRAC UNIVERSITY

Department of Computer Science and Engineering

Examination: Quiz 3

Semester : Fall 2023

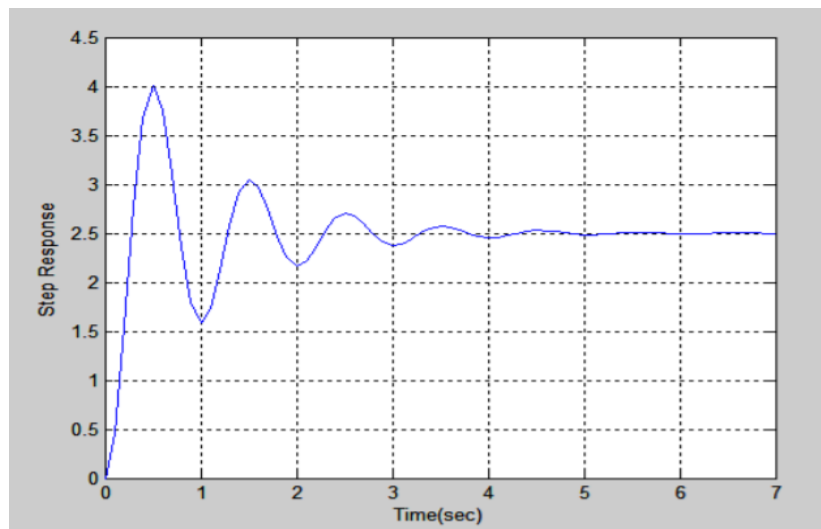
Duration: 30 min

Full Marks: 15

CSE 461: Introduction to Robotics (Section 4)

Imagine you are an engineer designing a cruise control system for a new self driving electric car model. The cruise control system is responsible for maintaining a constant speed set by the driver on the highway. The car is equipped with sensors to measure the car's speed, and it can adjust its acceleration and deceleration by controlling the electric motor.

You are working to develop a system where the desired value is 2.5 units and desired fluctuation is 4%. After a substantial amount of analysis, you found the following system response graph.



1.	CO2	a. Draw the block diagram of the cruise control system of the car described in the passage.	4
		b. Derive its Transfer Function.	3
		c. What are the differences between Closed Loop and Open Loop Control	2
		d. Calculate and Define the concept of Overshoot, Rise Time and Settling Time with a figure.	6

