BRAC UNIVERSITY

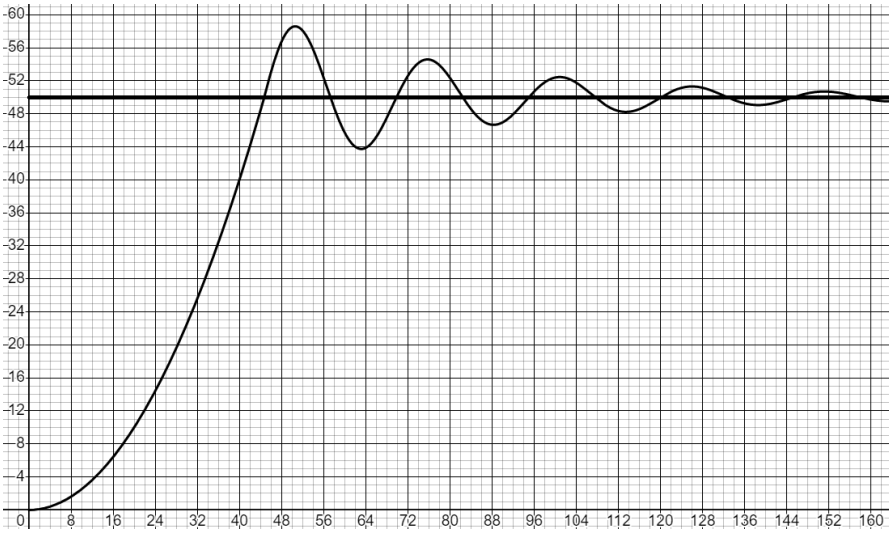
Department of Computer Science and Engineering

Examination: Quiz 3 **Duration: 30 min**
Semester : Fall 2023 **Full Marks: 15**

CSE 461: Introduction to Robotics (Section 5)

Imagine you are driving a car on a highway. Your goal is to maintain a constant speed of 60 mph. You can think of the car's cruise control system as a feedback control system. The car's speedometer measures the car's speed and sends this information to the cruise control system. The cruise control system then adjusts the throttle to maintain the desired speed.

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**