BRAC UNIVERSITY

Department of Computer Science and Engineering

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

CSE 461: Introduction to Robotics

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.

a. Define open-loop and closed-loop systems. Explain what system you will be using for the given scenario. Justify your answer. **[4 Marks]**
b. For the scenario, draw a diagram of the given system and label it according to the scenario. **[3 Marks]**
c. Calculate Transfer Function of your system step by step. **[4 marks]**
d. Define Overshoot, Settling time and Rise time of a system signal? **[4 Marks]**