FOUNDATIONAL PHYSICS Test#1 (1 hr.) 26th Nov.2021

Answer Either Question Number 1 or Question Number 2 but not both.

1. (a) Differentiate between the following terms:
    i. Displacement and Distance (2 marks)
    ii. Speed and Velocity (2 marks)
    b. A toy train travels round one circuit of a circular track of circumference 2.4 m in 4.8 s. Calculate:
        i. the average speed (2 marks)
        ii. the average velocity (2 marks)
    c. A car travels 840 m along a straight level track at constant speed of 35 m s^{-1}. The driver then applies the brakes and the car decelerates to rest at a constant rate in a further 7.0 s. Calculate:
        i. the time for which the car is travelling at constant speed (6 marks)
        ii. the acceleration of the car when the brakes are applied (6 marks)

2. (a) During the testing of a car, it is timed over a measured kilometer. In one test it enters the timing zone at a velocity of 50 m s^{-1} and decelerates at a constant rate of 0.80 m s^{-1}. Calculate:
    i. the velocity of the car as it leaves the measured kilometer. (4 marks)
    ii. the time it takes to cover the measured kilometer, (4 marks)
    b. State the Newton's laws of motion. (6 marks)
    c. A ball of mass 250g travelling at 13 m s^{-1} collides with and sticks to a second stationary ball of mass 400g.
        i. Calculate the speed of the ball after the impact. (3 marks)
        ii. Show whether or not the collision is elastic. (3 marks)