Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2021 @ DIU Blended Learning Center
Course Code: PHY113 (Day),   Course Title: Basic Physics
Level: 1 Term: 1   Section:
Instructor: SSK   Modality: Open Book Exam

Two and half hours (2:30) to support online open/case study based assessment   Marks: 25

1. *(a) Explain the changes in energy in the classification of work by an object.*   **3+2**

    (b) How the centripetal acceleration can be produced in rotational motion?

2. *(a) Which factors can influence the rolling and fluid friction? How can you overcome this resistive force?*   **3+2**
    (b) A race car moving on a circular track of radius 50 meters. If car's speed is 72 km/h, determine the magnitude of the centripetal acceleration

3. *(a) Find out the parameters for projectile motion along the horizontal direction.*   **3+2**
    (b) A car moving at 10 m/s crashes into a tree and stops in 0.26 s. Calculate the force the seat belt exerts on a passenger in the car to bring him to a halt. The mass of the passenger is 70 kg.

4. *(a) What is the significance of Lissajous figure in simple harmonic motion? Which device is used to observe this phenomenon?*   **3+2**
    (b) How much energy W is needed to compress a spring from 15 cm to 10 cm if the constant of the spring is 150 N / m?

5. *Write short notes on the following points*   **2+1+2**
    (i) Hooke's Law
    (ii) Frame of reference
    (iii) Coefficient of friction.