

**Home Assignment - 2020**

Class: IX

Subject: Physics

Time: 1 Hour 30 Min.

**Part I: Creative Questions**

*[ Read the stem carefully and answer the questions. ]*

- 1. A tiger starts to run with uniform acceleration  $10 \text{ ms}^{-2}$  to catch a deer 50 m ahead of it. Sensing the presence of the tiger the deer starts to run with uniform velocity  $30 \text{ ms}^{-1}$  towards a shelter 90 m away from the deer.**
  - a) What is acceleration?
  - b) Write down two differences between scalar and vector quantity.
  - c) When will the velocity of tiger be equal to the velocity of the deer?
  - d) Can the deer reach the shelter safely? Explain mathematically.
- 2. Rahim was going to Dhaka from Gazipur. The mass of the bus was 1400 kg and it was moving with an acceleration of  $4 \text{ ms}^{-2}$ . When the driver applied brake on moving bus, the passengers along with Rahim were leaning forward. Again, when the bus started to move, then they were bended backward.**
  - a) Define inertia.
  - b) Show that, force is a derived quantity.
  - c) Calculate the amount of force acting on the bus.
  - d) Analyze the cause of the passengers leaning forward at first and next time the cause of bending backward.
- 3.**

Time (s)	0	8	16	24	32	40	48
Velocity ( $\text{ms}^{-1}$ )	0	4	8	8	8	4	0

The change of magnitude of velocity of different times for a moving car from rest is shown in the above table.

- a) What is called periodic motion?
- b) Write down the laws of falling bodies.
- c) Calculate the distance travelled by the car within 1<sup>st</sup> 32 seconds.
- d) According to given stem, draw the graph on your answer sheet and explain the nature of velocity for different parts.

## Part II: Short Questions

- i. Who discovered quantum theory?
- ii. What is the dimension of force?
- iii. How much gram is equal to one tera gram?
- iv. Who was the pioneer of experimental scientific methods?
- v. What is the unit of amount of substance?
- vi. Velocity of a car is  $10 \text{ ms}^{-2}$ . If it creates a retardation  $10 \text{ ms}^{-2}$ , then what will be the velocity after 3 seconds?
- vii. In which place weight of a body is maximum?
- viii. What can be determined from the distance-time graph?
- ix. What is the measure of inertia?
- x. A force of 50N is applied on a body of mass 5 kg, what will be its acceleration?
- xi. Which force can produce 'zero resultant force'?
- xii. How can friction be increased?
- xiii. From which law of Newton's can we get the concept of inertia and force?
- xiv. What happens when a moving bus brakes suddenly?
- xv. Among all the frictional forces, which is the least magnitude?
- xvi. Who invented electromagnetic effect?
- xvii. In which year was the SI system of units introduced?
- xviii. Who defined the terms displacement, motion and acceleration?
- xix. Who succeeded in sending signals to far distance before Marconi?
- xx. How many number of motion equation are there?