PHYSICS — 9th

Time: 2 Hours 40 Minutes

SECTION-B

2. Attempt any eight of the following. All carry equal marks.

   i. Why in physics we need to write in scientific notation?

   ii. Keeping rules in view, round the following numbers to three significant figures:
   3.168, 7.563, 4.165, 8.275

   iii. Does a speedometer measure car's speed or velocity?

   iv. Differentiate between mass and weight by giving examples.

   v. In uniform circular motion, is the velocity constant? Is the acceleration constant? Explain.

   vi. Can a single force applied to a body change both its translational and rotational motion? Explain.

   vii. Moon is attracted by the earth, why it does not fall on earth?

   viii. If the speed of a particle triples, by what factor does its kinetic energy increase?

   ix. Explain how and why camels have adapted to allow them to walk more easily in desert conditions?

   x. An iron rim which is fixed around a wooden wheel is heated before its fixture. Explain why?

   xi. How convection currents are used in ventilation? Explain.

SECTION-C

Marks: 21

NOTE: Attempt any three of the following questions. All questions carry equal marks.

3. i. State and explain Newton's three laws of motion. Give one example of each.
   ii. A bullet of mass 0.008 kg is fired from a rifle with mass of 4 kg. If the velocity of the bullet is $715ms^{-1}$, what would be the recoil velocity of the gun?

4. i. Define kinetic energy. Derive mathematical form for kinetic energy.
   ii. A bullet of mass 30g travel at a speed of 400m/s. Calculate its kinetic energy.

5. i. State and explain Archimedes principle.
   ii. When a weight of 30N is hung from a wire of original length 2m, its new length becomes 2.20m. Calculate the force constant for the wire, if the elastic limit is not exceeded.

6. i. Define heat capacity and specific heat capacity of a substance. Explain the importance of high specific heat capacity of water.
   ii. What is the specific heat of a metal substance if 135J of heat is needed to raise 4.1kg of the metal from 18°C to 37.2°C.