PHYSICS — 9th

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 32

1. Attempt any eight of the following short questions. Each question carries 4 marks

   i. Define the following branches of Physics:
   (i) Atomic & Nuclear Physics (ii) Thermodynamics (iii) Quantum Physics (iv) Mechanics

   ii. Differentiate between vectors and scalars by giving one example of each?

   iii. If a force 120 N act on a body its momentum changes by 60 kg m/s. What is the time for which the force acts on the body?

   iv. What is uniform circular motion? Give example.

   v. Write four steps of head to tail rule for finding resultant of forces?

   vi. Define equilibrium. What is the difference between static and dynamic equilibrium?

   vii. What is meant by "Bio-Energy". Explain how solar energy is converted into "Bio-Energy?"

   viii. Define Power. A crane is capable of doing 2.50×10^5 J work in 10 s. What is the power of crane?

   ix. Define elasticity. State Hook's law and give its mathematical form.

   x. Define evaporation. How nature of liquid effects the rate of evaporation?

   xi. Define convection of heat. Explain the significance of convection currents in heating water.

SECTION-C

Marks: 21

NOTE: Attempt any three of the following questions. Each question carries 7 marks

2. i. Use graphical method to derive 3rd equation of motion.

   ii. An aircraft takes off at 82 m/s after accelerating from rest at 2.80 m/s^2. What is the minimum runway length required?

3. i. Calculate the mass of earth.

   ii. The mass of Mars is 6.4×10^{23} kg and having radius of 3.4×10^6 m. Calculate the gravitational field strength(g) on Mars surface.

4. i. State and explain Archimedes Principle.

   ii. A geologist find that a rock whose weight is 90.9 N has an apparent weight of 60.6 N when submerged in water what is the density of rock?

5. i. What is meant by linear thermal expansion? Derive expression for coefficient of linear thermal expansion.

   ii. A railway line made of iron is 1200 km long laid at 25°C. By how much will it contract in winter when the temperature falls to 15°C?