PR IX (A-I-A3) 25

PHYSICS (New Course)

9th (Fresh/Reappear)

Note: Time allowed for Section – B and Section – C is 2 Hours and 45 minutes.

Section – B

Marks: 32

Answer any EIGHT parts. Each part carries FOUR marks.

Q.1 Differentiate the base and derived physical quantities among the following:
Luminous Intensity, Torque, Electric Current, Velocity, Temperature,
Distance, Weight, Pressure

Q.2 A stone is dropped from a bridge and reaches the surface of water in 7 seconds. Find the height of the bridge from the surface of water.

Q.3 State Newton's Third law of motion and give two examples.

Q.4 Find the magnitude of centripetal force on a body of mass 4 kg moving with velocity 6 m/s in circle of radius 2m.

Q.5 State head-to-tail rule for vector addition of forces.

Q.6 Ali is pushing a cart with a force of 40 N at 60° with floor. Find the vertical and horizontal components of force.

Q.7 What is gravitational force? Does sun exert a stronger force on the Jupiter than the Jupiter exerts on the Sun? Justify your answer.

Q.8 A person pushes a shopping cart with a force of 30 N at an angle of 45° with horizontal over a distance of 5 m. Calculate the work done on the cart.

Q.9 What is the law of conservation of energy and how does it relate to electricity generation?

Q.10 What are stress and strain? Write their mathematical forms and units.

Q.11 Define conduction and explain how woolen sweaters keep us warmer in winter?

Section – C

Marks: 21

Note: Attempt any THREE questions. All questions carry equal marks.

Q-12 Describe motion and compare rotatory motion and vibratory motion with respect to:
(i) Movement of particles of an object (ii) Path of motion
Give examples from real life.

Q-13 (a) Obtain the expression for calculating mass of earth using law of universal gravitation.

(b) Determine the gravitational force between two bodies of masses, 3×10^3 kg and 8×10^2 kg, when they are separated by 0.5 m. ($G = 6.67 \times 10^{-11}$ Nm^2kg^{-2})

Q-14 (a) How does Pascal's Law explain the uniform transmission of pressure in a confined fluid? Explain with the help of example.

(b) The small piston of a hydraulic lift has an area of 0.20 m^2 where the large piston has an area of 0.90 m^2. A car weighing 1.2×10^4 N sits on rack mounted on the large piston. How large a force must be applied to the small piston to support the car?

Q-15 (a) Explain the linear thermal expansion of solids and the factors on which it depends.

(b) A railway line made of iron is 1200 km long and is laid at 27°C. By how much will it expand in summer when temperature rises to 42°C. ($\alpha = 12 \times 10^{-6} K^{-1}$)