

ESKPIX-XXVI (I)

SSC-(P-I)

PHYSICS – 9th

Time: 2 Hours 40 Minutes

SECTION "B"

Marks: 32

Note: Attempt any EIGHT (08) questions. All questions carry equal marks.

- Q.1.** What is physical quantity? List the names of any three derived physical quantities along with their units. 1+1+1+1
- Q.2.** Differentiate between distance and displacement. State with an example the condition at which distance travelled is not zero but displacement is zero. 1+1+1+1
- Q.3.** The linear momentum of a body increases from 20 Ns to 100 Ns in 4s. Calculate the magnitude of the net force acting on the body. 1+1+1+1
- Q.4.** State Newton's third law of motion with one example. Write its mathematical form. Why action and reaction cannot neutralize each other? 1+1+1+1
- Q.5.** Define torque and write its unit. What factors affect the magnitude of torque acting on a body? Explain briefly. 1+1+1+1
- Q.6.** Describe stable and unstable EQUILIBRIUM with examples. 1+1+1+1
- Q.7.** What is artificial satellite? Name the force that keeps satellite in its circular orbit. Why it does not fall to the earth? 1+1+1+1
- Q.8.** Prove that kinetic energy of a body of mass m , moving with velocity v , is given by: $E_k = \frac{1}{2}mv^2$ 1+1+1+1
- Q.9.** Define efficiency. Write its mathematical formula. Why actual machine cannot have 100% efficiency? 1+1+1+1
- Q.10.** Define the terms stress, strain, young's modulus and elastic limit. 1+1+1+1
- Q.11.** Write two practical applications each of good conductors and bad conductors. 2+2

SECTION "C"

Marks: 21

Note: Attempt any THREE (03) questions. All questions carry equal marks.

- Q.12.** a) Assuming uniform acceleration, derive the equation of motion $S = vit + \frac{1}{2}at^2$ using graphical analysis of motion. 04
- b) A car increases its velocity from 5 ms⁻¹ to 40 ms⁻¹ in 12s. Calculate the magnitude of its acceleration. 03
- Q.13.** a) Calculate the mass of the earth using Newton's law of universal gravitation. 04
- b) Define gravitational field and gravitational field strength. Why was the concept of gravitational field introduced? 03
- Q.14.** a) Define buoyant force and state Archimedes principle. Why does a large ship made of steel float but a small pebble sink in water? 04
- b) The weight of a stone is 80N in air. When submerged in water, its weight becomes 75N. What is the buoyant force due to water? 03
- Q.15.** a) Explain linear thermal expansion of solids. 04
- b) Why does liquid have two kinds of thermal expansions? List the names of these expansions and discuss them briefly. 03