

## Physic Class IX

### Guess Paper



### Section A (Short Question Answer)

Q1. Define Physic. define two branches of Physic.

**OR**----->Give three importance of physics

Q2. Define the types of motion. With example

**OR**----->Give three Differentiate between Renewable and non-renewable energy sources.

Q3. State Newton 2<sup>nd</sup> law of motion. Derive  $F = ma$ .

**OR**----->Give three advantages of friction.

**OR**----->Give three disadvantages of friction.

Q4. State and explain Condition of equilibrium

**OR**----->Discuss the states of equilibrium.

Q5. State and explain Hooke's law.

Q6. What is Brownian motion. State Boyle's Law also give its mathematical expression.

Q7. A bus is moving on a road with  $15\text{ms}^{-1}$  and it accelerates at  $5\text{ms}^{-2}$ . Find the final velocity of bus after 6 seconds.

**OR**----->A ball is dropped from a height of 50m. What will be its velocity before touching ground?

**OR**----->If a body is thrown up ward with vertical velocity  $30\text{ms}^{-1}$ . Calculate maximum height which body can reach.

Q8. Find the momentum of body of mass 6 kg moving with a velocity of  $25\text{ms}^{-1}$ .

**OR**----->A force of 3400 N is applied on a body of mass is 850 kg, find the acceleration produced by the force?

**OR**----->A car is running on a circular part of highway having about 800m radius. The mass of car is 600kg and its velocity is  $72\text{kmh}^{-1}$ . Find (i) Centripetal force exerted by the car. (ii) Centripetal acceleration of car.

Q9. A gardener is driving a lawnmower with a force of 80 N that makes an angle of  $30^\circ$  with the ground. Find its horizontal component and vertical components. ( $\sin 30^\circ = 0.5$  and  $\cos 30^\circ = 0.866$ )

**OR**----->Horizontal and vertical components of a force are 4 N and 3 N respectively. Find Resultant force

**OR**----->A spanner of 0.3 m length can produce a torque of 300Nm. determine the force applied on it

**OR**----->A spring has spring constant  $k = 50\text{Nm}^{-1}$ . What load is required to produce an extension of 5 m?

**OR**----->If the density of sea water is  $1950\text{kgm}^{-3}$ , calculate the pressure on a body of 40m below the surface of sea?

**OR**----->In a hydraulic lift system, what must be the surface area of a piston. If a pressure of 300 kpa is used to provide an upward force of 2000 N?

**OR**----->In a hydraulic press, a force of 150 N is applied on the pump of cross-sectional area  $0.02\text{m}^2$ . Find the force that compresses a cotton bale placed on larger piston of cross-sectional area  $1.5\text{m}^2$ .

- Q10. Determine the gravitational force of attraction between two spherical bodies of masses 500kg and 800kg. Distance between their centres is 2 meters.
- OR**----->Weight of Rani is 450N at the surface of Earth. Find her mass?
- OR**----->A planet has mass three times of Earth and radius two times that of Earth. If the value of “g” on the surface of Earth is  $10\text{ms}^{-2}$ . Calculate acceleration due to gravity on the planet.
- Q11. How much work is needed to move horizontally a body 20m by a force of 30N, the angle between the body and the horizontal surface is  $60^\circ$ ?
- OR**----->A ball of mass 400 gram, strikes the wall of velocity 4m/sec. How much is the kinetic energy of the ball at the time it strikes the wall?
- OR**----->If LED screen of mass 10kg is lifted up and kept it on a cupboard of height 2m. Calculate the potential energy stored in the LED screen.
- Q12. The thermal energy required to raise the temperature of 50g of water from  $40^\circ\text{C}$  to  $70^\circ\text{C}$  is 6300 Joules. Calculate the specific heat capacity of water.
- OR**----->2kg of copper requires 2050J of heat to raise its temperature through  $10^\circ\text{C}$ . Calculate the specific heat capacity of the sample.
- OR**----->A copper rod 15m long is heated, so that its temperature changes from  $30^\circ\text{C}$  to  $85^\circ\text{C}$ . Find the change in the length of the rod. The coefficient of linear expansion of copper is  $17 \times 10^{-6} \text{ }^\circ\text{C}^{-1}$ .

### Section C (Detailed Question Answer)

- Q13. Derive third equation of motion:  $2as = Vf^2 - Vi^2$
- Q14. Define momentum. Give its formula and unit also derive Prove  $F = \frac{\Delta p}{t}$
- OR**-----> State and explain Law of Conservation of Momentum.
- Q15. State and explain Newton law of gravitational.
- OR**-----> Derive relation for mass of earth with the help of newton law of gravitational formula. Also calculate the mathematical value of mass of earth.
- OR**-----> Derive  $V^2 = \frac{GM}{R+h}$
- Q16. Define thermal expansion. Define linear thermal expansion. Derive  $\Delta L = \alpha L \Delta T$
- OR**-----> Define volumetric thermal expansion. Derive  $\Delta V = \beta V \Delta T$