Physics Class 9

Karachi Board

Target paper

Chapter # 1

Physical Quantities and Measurement

Q1) Define Physic. Name and define five branches of Physic

Q2) Define fundamental physical quantities. and derived Physical quantities.

Q3) What is density?

Chapter # 2

Kinematics

Q1) Define the types of motion. With example

Q2) Differential between **(a)**distance and displacement, **(b)**speed and velocity, **(c)** scalar and vector

Q3) What is acceleration? Also write its formula and unit.

Q4) **LONG:** Derive second equation of motion: $S = Vit + \frac{1}{2} at^2$

Q5) **LONG:** Derive third equation of motion: $2as = Vf^2 - Vi^2$

Chapter # 3

DYNAMICS

Q1) Define momentum with SI unit.

Q2) State and explain Law of Conservation of Momentum.

Q3) **LONG:** Prove $F = \frac{\Delta p}{t}$

Q4) What is inertia? State Newton 1st and 3rd law of motion

Q5) State Newton 2nd law of motion. Show the relationship between applied force and the acceleration produced in the body.

Q6) Give differences between mass and weight, Centripetal force and Centrifugal force.

Q7) What is friction? Give some advantages and disadvantages of friction.

Q8) What are some ways reducing friction?

Chapter # 4

TURNING EFFECT 0F FORCES

Q1) **LONG:** Define resolution of vector. Derive expression for rectangular component of vector.

Q2) Define torque. Give its formula and unit.

Q3) State and explain Condition of equilibrium

Q4) What are states of equilibrium. Also write their conditions.

CHAPTER # 5

FORCES AND MATTER

Q1) State and explain Hooke's law. State Pascal's law.

Q2) **LONG:** What is hydraulic machine? Describe the construction and working of hydraulic press.

CHAPTER 6

GRAVITATIONAL

Q1. **LONG:** State and explain Newton law of gravitational

Q2. Differentiate between G and g, Natural and artificial satellite

Q3. **LONG:** Derive relation for mass of earth with the help of newton law of gravitational formula. Also calculate the mathematical value of mass of earth

Q4. **LONG:** Derive $V^2 = \frac{GM}{R+h}$

CHAPTER 7

PROPERTIES OF MATTER

Q1. Discus the kinetic postulate of gas

Q2. What is Brownian motion. State Boyle's Law

Chapter 8

ENERGY SOURCES ANDTRANSFER OF ENERGY

Q1. Define Work. Give if formula and unit

Q2. Define energy. Differentiate between Kinetic energy and potential energy.

Q3. State law of conservation of energy

Q4. Differentiate between Renewable and non-renewable energy sources.

Q5. Define power. Give it formula and unit

Chapter 9

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THERMAL PROPERTIES OF MATTER

Q1. Differentiate between heat and Temperature

Q2. **LONG:** Define thermal expansion. Define linear thermal expansion. Derive $\Delta L = \alpha L \Delta T$

Q3. **LONG:** Define volumetric thermal expansion. Derive $\Delta V = \beta V \Delta T$

Q4. Write short note on bimetallic thermostat. What do you know about Rivets?

Numerical

Q1. The speed of train is 36 kmh^{-1}. How much distance will be covered in 3 hours?

Q2. A bus is moving on a road with 15ms^{-1} and it accelerates at 5ms^{-2}. Find the final velocity of bus after 6 seconds.

Q3. A ball is dropped from a height of 50m. What will be its velocity before touching ground?

Q4. If a body is thrown up ward with vertical velocity 30ms^{-1}. Calculate maximum height which body can reach.

Q5. Find the momentum of body of mass 6 kg moving with a velocity of 25 ms^{-1}.

Q6. A force of 3400 N is applied on a body of mass is 850 kg, find the acceleration produced by the force?

Q7. The mass of an object is 60 kg, find its weight on (i) Earth (ii) Moon (iii) Mars assume the acceleration due to gravity on Earth = 9.8 ms^{-2} on Moon=1.6 ms^{-2} and on Mars= 3.7 ms^{-2}

Q8. 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 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 40° with the ground. Find its horizontal component and vertical component

Q10. Horizontal and vertical components of a force are 4 N and 3 N respectively. Find Resultant force

Q11. A spanner of 0.3 m length can produce a torque of 300Nm. determine the force applied on it

Q12. A spring has spring constant k = 50 Nm^{-1}. What load is required to produce an extension of 5 m?

Q13. Calculate the pressure at a depth of 3m in a swimming pool? (density of water = 1000kgm^{-3})

Q14. A boy is digging a hole with spade of edge 0.1 m^2. Calculate the pressure when he is exerting the force of 100N onto the spade.

Q15. If the density of sea water is 1950 kgm^{-3}, calculate the pressure on a body of 40m below the surface of sea?

Q16. 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?

Q17. In a hydraulic press, a force of 150 N is applied on the pump of cross-sectional area $0.02m^2$. Find the force that compresses a cotton bale placed on larger piston of cross-sectional area $1.5m^2$.

Q18. Determine the gravitational force of attraction between two spherical bodies of masses 500kg and 800kg. Distance between their centers is 2 meters.

Q19. Weight of Rani is 450N at the surface of Earth. Find her mass?

Q20. 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 $10ms^{-2}$. Calculate acceleration due to gravity on the planet.

Q21. Calculate the speed of a satellite which orbits the Earth at an altitude of 400 kilometers above Earth's surface.

Q22. A cylinder contains $60cm^3$ of air at a pressure of 140kPa. What will its volume be if the pressure on it is increased to 420 kPa?

Q23. 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^o?

Q24. 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?

Q25. 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.

Q26. Calculate the power of a machine. If the machine performs 900 joules of work in 30 minutes.

Q27. If the efficiency of a machine is 70% and its output is 100 J then calculate its input.

Q28. Calculate the power of a machine, if it does 40 Joules of work in 10 sec.

Q29. Convert 30^oC into Kelvin and Fahrenheit Scale. Convert 212^oF into Celsius and Kelvin.

Q30. The thermal energy required to raise the temperature of 50g of water from 40^oC to 70^oC is 6300 Joules. Calculate the specific heat capacity of water.

Q31. 2kg of copper requires 2050J of heat to raise its temperature through 10^oC. Calculate the heat capacity of the sample.

Q32. A copper rod 15m long is heated, so that its temperature changes from 30^oC to 85^oC. Find the change in the length of the rod. The coefficient of linear expansion of copper is $17 \times 10^{-6}\ ^oC^{-1}$.