

BISHOP COTTON SCHOOL, SHIMLA
ASSIGNMENT WORK
CLASS: 10
PHYSICS

Question 1

Complete the following statements:

- a) For a body to be in equilibrium, the _____ moment should be equal to the _____ moment.
- b) A beam balance when balanced in horizontal position, is in _____ equilibrium.
- c) When the line of action of force passes through the point about which the moment is to be calculated, the moment of force becomes _____.
- d) The centripetal force on an electron orbiting the nucleus is provided by the _____.
- e) A dynamo changes _____ energy to _____ energy.
- f) In a simple voltaic cell _____ energy is changed to _____ energy.

Question 2

Define the following terms:

- a) Kilowatt-hour (kWh)
- b) Electron volt (eV)
- c) Work
- d) power
- e) Momentum
- f) Kinetic energy
- g) Potential energy

Question 3

Short Answers:

- a) How does uniform circular motion differ from uniform linear motion?
- b) At which point will the centre of gravity of a triangular lamina be situated?
- c) Define the term "moment of force" and state its S.I unit.
- d) Can a torque of a small force be large? Explain.
- e) Is it correct to say that the torque associated with a given force can have widely differing values? Explain briefly.
- f) Does the total moment of a couple depend on the point about which the rotation is taking place? Try and give a proof in support of your answer.
- g) Can a particle keep on moving in circular path even when there is no centripetal force? Explain briefly with the help of an example.

Question 4

Numericals:

- a) Normal human heart beats 72 times in one minute. If the work done per beat is one joule, what is the power of the heart?
- b) A boy exerts a force of 150 N in pulling a cart at a constant speed of 10 m/s. Calculate the power exerted.
- c) A body weighing 400 N possesses 500 J of kinetic energy. Calculate the velocity with which the body is moving ($g = 10 \text{ m/s}^2$).
- d) Compare the kinetic energies of a light and heavy mass that have equal momentum. Show the necessary working also.
- e) It takes 10 minutes for an engine to pump 30,000 liters of water to a vertical height of 45 m. if $g = 9.8 \text{ m/s}^2$, find the work done by the engine and power of the engine.
- f) A uniform meter scale kept on a wedge at 32 cm mark, balances itself when a weight of 100 gf is suspended at 24 cm mark. Find the weight of the meter scale.
- g) Three forces F_1 , F_2 and F_3 of magnitudes 10N, 15N and 20N are acting along lines whose perpendicular distances from a given turning point P are 5m, 6m and 2m respectively. Arrange the magnitudes of the moments of these forces about the given turning point in descending order.
