



ASSIGNMENT NO. 3

SUBJECT: PHYSICS

CLASS-IX

OCTOBER'2026

CH 7: WORK ENERGY AND SIMPLE MACHINES

Q1. Choose the correct option:

- i. A girl carries a bag horizontally over her head while walking 10 m. The upward force she applies is 30 N. How much work does she do on the bag?
(a) 300 J (b) 30 J (c) 0 J (d) 3 J
- ii. A person does 500 J of work in 10 minutes. Another person does 600 J of work in 20 min. Let the power delivered by A and B be P_A and P_B , then.
a) $P_A = P_B$ b) $P_A > P_B$
c) $P_A < P_B$ d) P_A and P_B are undefined

Q2. In each of the following questions, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a) Both A and R are true, and R is correct explanation of the assertion.
- b) Both A and R are true, but R is not the correct explanation of the assertion.
- c) A is true, but R is false.
- d) A is false, but R is true.

(a) **Assertion:** A ball rebounds to the same height on striking the ground from which it was released.

Reason: According to the law of conservation of energy the total energy of the system remains constant.

(b) **Assertion:** Work done by an athlete completing a round of field is zero

Reason: The displacement of a body returning back to the initial position is zero.

Q3. a) Define potential energy.

b) 60000 J of energy is utilized in lifting a mass of 50kg. Calculate the height to which the mass is lifted.

Q4. Avinash can run with a speed of 8 m/s against the frictional force of 10 N and Kapil can move with a speed of 3 m/s against the frictional force of 25 N. Who is more powerful and why?

Q5. State law of conservation of energy. Using the example of a ball thrown vertically upward, explain how energy is transformed between these two forms. Also state the work-energy theorem.

Q6. A 5kg ball is dropped from a height of 10 m.

- (i) Find the kinetic energy just before it reaches the ground and
- (ii) calculate the velocity before it reaches the ground.

Q7. A boy of mass 50kg runs up a staircase of 45 steps in 9 s. If the height of each step is 15 cm, find his power. Take $g = 10 \text{ m/s}^2$

Q8. Two workmen are employed on a building project, as shown in figure.

- (i) Workman 1 drops a hammer, which falls to the ground. The hammer has a mass of 2.0 kg, and is dropped from a height of 4.8 m above the ground.
 - (a) Calculate the change in gravitational potential energy of the hammer when it is dropped.
 - (b) Describe the energy changes from the time the hammer leaves the hand of workman 1 until it is at rest on the ground.
- (ii) Workman 2 picks up the hammer and takes it back, up the ladder to workman 1. He climbs the first 3.0 m in 5.0 s. His total weight, including the hammer, is 520 N. Calculate the useful power which his legs are producing.

