



INDIAN SCHOOL AL WADI AL KABIR



Class: IX	DEPARTMENT OF SCIENCE -2024-25 SUBJECT: PHYSICS	Date: 27 /11/ 2024
Worksheet No.:4 With answers	Topic: WORK AND ENERGY-PART 1	Note: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. MULTIPLE CHOICE QUESTIONS (1 MARK)

- When a body falls freely under gravity, then the work done by the gravity is _____
 - Positive
 - Negative
 - Zero
 - Infinity
- For a body moving in motion, the work done is equal to _____
 - kinetic energy
 - Potential energy
 - heat energy
 - chemical
- What is the unit of energy?
 - Joule
 - Newton
 - Newton second
 - kgm
- A person is holding a bucket by applying a force of 10N. He then climbs up a vertical distance of 10m. Find the total work done by him?
 - 50J
 - 150J
 - 100J
 - 200J
- The energy possessed by a body in motion is called _____
 - kinetic energy
 - potential energy
 - motion energy
 - none of these

[II] VERY SHORT ANSWER QUESTIONS (2 MARKS)

- [1] Define kinetic energy and potential energy
- [2] What are the 2 types of mechanical energy?
- [3] Write the formula to find work. Is work a scalar or vector quantity?
- [4] Define 1 joule

[III] VERY SHORT ANSWER QUESTIONS (3 MARKS)

- [1] Derive the expression for kinetic energy.
- [2] Derive the expression for potential energy.
- [3] A body of mass 5 kg is moving with a velocity of 10m/s. What is its kinetic energy?
- [4] Find the potential energy possessed by a body of mass 2 kg kept at a height of 50 m [$g = 10 \frac{m}{s^2}$].

[IV] CASE STUDY BASED QUESTIONS

Work done in science is much different from the conception of work in our daily life. We consider that work is being done by a clerk while sitting at one place from morning to evening.

- [1] A coolie holding a luggage of 10N for 10 minutes. What is the work done?
- [2] A body is moving along a straight road. What type of energy the body possess?
- [3] A pair of bullocks exerts a force of 10N on a plough. The field being ploughed is 15m long in 15 s. How much is the work done and the power developed?

[V] ASSERTION REASON TYPE QUESTIONS

Directions: In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
 - (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
 - (c) Assertion is true but reason is false.
 - (d) Both Assertion and Reason are false.
- [1] Assertion: A force of 10N is acting on a rigid wall. Work done is zero.
Reason: Work is done, if the body get displaced due to force
 - [2] Assertion: Work done by force of friction is negative
Reason: Frictional force always acts in opposite direction to that of motion of the body

ANSWERS

[I] MULTIPLE CHOICE QUESTIONS (1 MARK)

- [1] a [2] a [3] a [4] c [5] a

[II] VERY SHORT ANSWER QUESTIONS

Refer notes

[III] SHORT ANSWER QUESTIONS

[1] Refer notes

[2] Refer notes

[3] $K.E = \frac{1}{2} m v^2 = \frac{1}{2} \times 5 \times 10^2 = 250J$

[4] $P.E = mgh = 2 \times 10 \times 50 = 1000 J$

[IV] CASE STUDY BASED QUESTIONS

[1] zero

[2] kinetic energy

[3] $w = F \times S = 10 \times 15 = 150 J$

Power = work/time = $150/15 = 10$ Watts

[V] ASSERTION REASON TYPE QUESTIONS

[1] a

[2] a

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