WORKSHEET 2

CHAPTER 5 – WORK AND ENERGY

A. Tick (✓) the correct option.

1. The SI unit of energy is
   a. Newton-Metre. b. Joule. c. Newton. d. Watt.
2. If velocity of a moving body is doubled, the kinetic energy of the body gets
   a. doubled. b. tripled. c. four-times. d. halved.
3. Work done is maximum when angle between the direction of force and direction of displacement is
   a. 0°. b. 90°. c. 60°. d. none of these.
4. Potential energy of a body of mass m at a height h is given by
   a. mg b. $\frac{1}{2}mgh$ c. mgh d. $2\,mgh$
5. Energy possessed by a body by virtue of its position or configuration is called
   a. kinetic energy. b. potential energy. c. mechanical energy. d. none of these.

B. Fill in the blanks.

1. SI unit of power is _____
2. 1 kWh is equivalent to _____
3. The change of one form of energy into another is known as _____ of energy.
4. Elastic potential energy of a body is the energy possessed by the body by virtue of its _____
5. Mechanical energy is of two types _____ and _____

C. State whether the given statements are true or false.

1. Work done is positive when angle between direction of force and direction of displacement is obtuse.
2. A bullet fired from a gun possesses kinetic energy.
3. Kinetic energy of a body is directly proportional to the cube of its velocity.
4. The sun is the ultimate source of all types of energy.
5. A television converts electrical energy to light and heat energy.

D. Match the following.

1. Solar cell	light energy to electrical energy
2. Photoelectric cell	nuclear energy to electrical energy
3. Electrolysis	electrical energy to sound energy
4. Nuclear reactor	heat energy to electrical energy
5. Microphone	electrical energy to chemical energy

Name: ..... Teacher's signature: .....

Class: IX Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. What is law of conservation of energy?
2. Give the SI unit of power.

Short Answer Questions

1. Define 1 kilowatt-hour.
2. What is the transformation of energy in photoelectric cell.

Long Answer Questions

1. If an electric bulb of 50 W is lighted for 2 h daily, how much electrical energy would be consumed?
2. What is the power of pump which takes 20 s to left 200 kg of water to a height of 40 m?

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. b 2. c 3. a 4. c 5. b

B. Fill in the blanks.

1. watt
2. 3.6×10^6 J
3. transformation
4. configuration
5. kinetic energy, potential energy

C. State whether the given statements are true or false.

1. F 2. T 3. F 4. T 5. T

D. Match the following.

1. Solar cell	heat energy to electrical energy
2. Photoelectric cell	light energy to electrical energy
3. Electrolysis	electrical energy to chemical energy
4. Nuclear reactor	nuclear energy to electrical energy
5. Microphone	electrical energy to sound energy

E. Answer the following questions.

Very Short Answer Questions

1. According to the law of conservation of energy, energy can neither be created nor be destroyed. It can only be converted from one form to another.
2. The SI unit of power is watt.

Short Answer Questions

1. One kilowatt-hour (kWh) is the amount of electrical energy consumed by an electrical appliance of power 1 kilowatt in one hour.
2. A photoelectric cell transforms light energy to electrical energy.

Long Answer Questions

1. Power of bulb = 50 W

   Duration of time used for (t) = 2 h

$$P = \frac{E}{t}$$

   or

$$E = P \times t$$

$$= 50 \times 2$$

$$= 100 \text{ Wh}$$

$$= 0.1 \text{ kWh} \quad \text{or} \quad 0.2 \text{ unit}$$

2. Mass of water (m) = 200 g

$$g = 10 \text{ m/s}^2$$

$$h = 40 \text{ m}$$

$$t = 20 \text{ s}$$

$$\text{Work done} = mgh = 200 \times 10 \times 40$$

$$= 80{,}000 \text{ J}$$

$$\text{Power} = \frac{W}{t}$$

$$= \frac{80{,}000}{20} = 4000 \text{ W on } 4 \text{ kW}$$