WORKSHEET 2

CHAPTER 9 – ELECTRICAL POWER AND HOUSEHOLD CIRCUITS

A. Tick (✓) the correct option.

1. In a television, electrical energy is converted into
   a. chemical energy. b. light energy. c. magnetic energy. d. none of these.
2. SI unit of power is
   a. watt. b. joule. c. dioptre. d. volt.
3. 1 kWh is equal to
   a. 3.6×10^6 J. b. 36×10^6 J. c. 36×10^{-6} J. d. zero.
4. The colour of live wire according to the new convention is
   a. grey. b. brown. c. blue. d. red.
5. A fuse protects the circuit from
   a. short circuit. b. power cut. c. overloading. d. none of these.

B. Fill in the blanks.

1. The electric meter measures the quantity of electricity consumed in units of _____.
2. Power is distributed in houses by two system of wiring commonly called _____ and _____
3. The commercial unit of power is _____
4. A fuse rated at 30 A can stand current upto _____
5. Kilowatt-hour is the unit of _____

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

1. In India, the potential difference between live wires and neutral wires is 240 V.
2. Electrical energy cannot be transmitted by wires.
3. A fuse is made up of material having low melting point and high resistivity.
4. Cartridge type fuse is used for additional safety in home appliances.
5. A fuse is based on the heating effect of current.

D. Match the following.

1. Cut out type fuse	$P = VI$
2. Earth pin	domestic circuits
3. 1 h.p.	overloading
4. Number circuit breaker (MCB)	746 W
5. Power	thicker and longer

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

Class: X Date: .....

E. Answer the following questions.

Very short answer questions

1. What is the relationship between SI unit of electrical energy and commercial unit of electrical energy?
2. What is the SI unit of electric power?

Short answer questions

1. Name the three core cables used in supply of electric power.
2. What is the potential difference between live wire and neutral wires in India?

Long answer questions

1. What are the disadvantages of tree system of distribution of power?
2. In a house, five 30 W electric bulbs are lit for 5 h, a 1000 W electric heater is used for 3 h daily. Calculate the electrical energy consumed in 30 days.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

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

B. Fill in the blanks.

1. kilowatt-hours
2. tree system, ring system
3. horsepower
4. 30 A
5. electrical energy

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

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

D. Match the following.

1. Cut out type fuse	domestic circuits
2. Earth pin	thicker and longer
3. 1 h.p.	746 W
4. Miniature circuit breaker	overloading
5. Power	$P = VI$

E. Answer the following questions.

Very short answer questions

1. 1 kWh = 3.6×10^6 J
2. Watt (W).

Short answer questions

1. Live wire (L), neutral wire (N) and earth wire (E).
2. The potential difference between live and neutral wires in India is 220 V.

Long answer questions

1. The disadvantages of the tree system of distribution of power are
   i. It requires plugs and sockets of different current values for different appliances.
   ii. Cost of wiring is expensive as it requires long length of wires.
   iii. When fuse in one distribution circuit melts, it disconnects all the appliances in that distribution circuit.
   iv. If new appliance is to installed, then it is necessary to connect through new wiring upto the distribution box. This could be expensive and inconvenient.
2. Five 30 W bulbs lit for 5 hours

$$P = 30 \text{ W} = \frac{30}{1000} \text{kW}$$
$$= 0.03 \text{ kW}$$
$$\text{Time} = 5 \text{ h}$$
$$W = P \times t$$

Energy consumed by one bulb = 0.03 × 5
= 0.15 kWh
Energy consumed by 5 bulbs = 0.15 × 5
= 0.75 kWh
Power of electric heater = 1000 W = 1 kW
Time = 3 h
$W = P \times t$
Energy consumed by heater in one day = 1 × 3 = 3 kWh
Total energy consumed in one day = 3 + 0.75 = 3.75 kWh
Total energy consumed in 30 days = 3.75 × 30 = 112.5 kWh