

# D.A.V PUBLIC SCHOOL

SECTOR -3 DHURWA, RANCHI -4

CLASS-X (Science)

Subject :- Physics

## Chapter: - Sources of Energy

### Holiday Homework

1. Name the component of sunlight, exposure to which may cause skin cancer.
2. Flowing water possess which type of energy.
3. Name one place in India where wind energy power station is installed.
4. What is a solar panel?
5. What type of energy transformation takes place during winding of spring of a clock?
6. Write two differences between renewable and non – renewable sources of energy.
7. What is the principle of solar cooker? Name two types of solar cooker.
8. Name any two types of harmful nuclear radiations emitted during nuclear fission.
9. What is thermal power plant? Where it is preferably situated?
10. What is the principle of solar cooker? Give two limitations and two advantages of solar cooker.
11. Name the fuel for hydro power plant. Mention two advantages and disadvantages of producing electricity at the hydro power plant.
12. Explain why:
  - a) It is difficult to burn a piece of wood fresh from a tree.
  - b) Pouring dry sand over the fire extinguishes it.
  - c) It is difficult to use hydrogen as source of energy.
13. What are the different types of energies obtained from sea? Explain.
14.
  - a) What is a principle of Biogas?
  - b) Explain it working in brief.
  - c) Draw a labelled diagram of biogas.

# Chapter: - Electricity

## Holiday Homework

1. On what factors does the resistance of a conductor depend?
2. Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source? Why?
3. Let the resistance of an electrical component remain constant while the potential difference across the two ends of the component decreases to half of its former value. What change will occur in the current through it?
4. Why are coils of electric toasters and electric irons made of an alloy rather than a pure metal?
5. Draw a schematic diagram of a circuit consisting of a battery of three cells of 2 V each, a 5  $\Omega$  resistor, an 8  $\Omega$  resistor, and a 12  $\Omega$  resistor, and a plug key, all connected in series.
6. Redraw the circuit of Question 1, putting in an ammeter to measure the current through the resistors and a voltmeter to measure the potential difference across the 12  $\Omega$  resistor. What would be the readings in the ammeter and the voltmeter?
7. Judge the equivalent resistance when the following are connected in parallel – (a) 1  $\Omega$  and  $10^6 \Omega$ , (b) 1  $\Omega$ ,  $10^3 \Omega$ , and  $10^6 \Omega$ .
8. An electric lamp of 100  $\Omega$ , a toaster of resistance 50  $\Omega$ , and a water filter of resistance 500  $\Omega$  are connected in parallel to a 220 V source. What is the resistance of an electric iron connected to the same source that takes as much current as all three appliances, and what is the current through it?
9. How can three resistors of resistances 2  $\Omega$ , 3  $\Omega$ , and 6  $\Omega$  be connected to give a total resistance of (a) 4  $\Omega$ , (b) 1  $\Omega$ ?

10. What is (a) the highest, (b) the lowest total resistance that can be secured by combinations of four coils of

resistance  $4\ \Omega$ ,  $8\ \Omega$ ,  $12\ \Omega$ ,  $24\ \Omega$ ?

11. Compute the heat generated while transferring 96000 coulomb of charge in one hour through a potential difference of 50 V.

12. A copper wire has diameter 0.5 mm and resistivity of  $1.6 \times 10^{-8}\ \Omega\ \text{m}$ . What will be the length of this wire to make its resistance  $10\ \Omega$ ? How much does the resistance change if the diameter is doubled?

13. The values of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below –

I (Ampere)	0.5	1.0	2.0	3.0	4.0
V (Volts)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of that resistor.

14. A battery of 9 V is connected in series with resistors of  $0.2\ \Omega$ ,  $0.3\ \Omega$ ,  $0.4\ \Omega$ ,  $0.5\ \Omega$  and  $12\ \Omega$ , respectively. How much current would flow through the  $12\ \Omega$  resistor?

15. Show how you would connect three resistors, each of resistance  $6\ \Omega$ , so that the combination has a resistance of (i)  $9\ \Omega$ , (ii)  $4\ \Omega$ .

16. Several electric bulbs designed to be used on a 220 V electric supply line, are rated 10 W. How many lamps can be connected in parallel with each other across the two wires of 220 V line if the maximum allowable current is 5 A?

17. A hot plate of an electric oven connected to a 220 V line has two resistance coils A and B, each of  $24\ \Omega$  resistance, which may be used separately, in series, or in parallel. What are the currents in the three cases?

18. Compare the power used in the  $2\ \Omega$  resistor in each of the following circuits: (i) a 6 V battery in series with  $1\ \Omega$  and  $2\ \Omega$  resistors, and (ii) a 4 V battery in parallel with  $12\ \Omega$  and  $2\ \Omega$  resistors.

19. Two lamps, one rated 100 W at 220 V, and the other 60 W at 220 V, are connected in parallel to electric mains supply. What current is drawn from the line if the supply voltage is 220 V?

20. Which uses more energy, a 250 W TV set in 1 hr, or a 1200 W toaster in 10 minutes?

