

**ELECTRICITY**  
**FORMATIVE ASSESSMENT I**  
**Q. PAPER**

MARKS-30

TIME- 70 MINUTES

**Instructions:**

- Questions : 1 to 5 – 1 Mark each
- Questions : 6 to 9 – 2 Marks each
- Questions : 10 to 13 – 3 Marks each
- Question 14 – 5 Marks

1. Define resistivity of material.
2. What is the power of torch bulb rated at 2.5V and 500mA?
3. Why series arrangement not used for connecting domestic electrical appliances in a circuit?
4. Which has higher resistance – a 50W bulb or a 2.5W bulb and how many times?
5. What is the direction of flow of conventional current?
6. Why is it not advisable to handle electrical appliances with wet hands?
7. Two electric bulbs marked 100W 220V and 200W 200V have tungsten filament of same length. Which of the two bulbs will have thicker filament?
8. How does the resistance of a wire vary with its area of cross section?
9. Draw the following symbols
 

|                               |                   |
|-------------------------------|-------------------|
| i) Battery                    | ii) Switch closed |
| iii) Resistor of resistance R | iv) Voltmeter     |
10. A geyser is rated 1500W, 250V. This geyser is connected to 250V mains. Calculate –
  - i) The current drawn
  - ii) The energy consumed in 50hrs.
  - iii) The cost of energy consumed at Rs. 2.20 per kWh.
11. What is the function of an electric fuse? Name the material used for making fuse. In household circuit where is fuse connected?
12. Write one important advantage of using alternative current. How alternating current differ from direct current?
13. What is the difference between short circuiting and overloading?
14.
  - a) Draw diagram showing three resistors  $R_1$ ,  $R_2$  and  $R_3$  in series.
  - b) Two resistors of resistance  $4\Omega$  and  $12\Omega$ 
    - i) In parallel
    - ii) In series

Calculate the values of effective resistance in each case.

**HOTS QUESTIONS (SOLVED / UNSOLVED)**

- Q.1. Why is the tungsten metal more coiled in the bulb and not installed in straight parallel wire form?
- Ans. The coiled wire of tungsten increases the surface area of the wire in very less space so as to emit more light and helps in glowing with more intensity.
- Q.2. Why are fairy decorative lights always connected in parallel?
- Ans. When the fairy lights are connected in series the resistance offered will be greater and brightness of the bulbs will be affected. But in parallel connection all the bulbs will glow with same intensity and if any more bulbs gets fused the other bulbs will continue to glow.
- Q.3. What will happen when -
- Voltmeter is connected in series?
  - Ammeter is connected in parallel?
- Ans. a) Negligible current will pass through the circuit because the voltmeter has a very high resistance.
- b) Ammeter will get damaged due to flow of large amount of current through it, because it has low resistance.

**ELECTRICITY****ORAL QUESTIONS (CONVERSATION TYPE)**

- Why is electricity more useful than other forms of energy?
  - How is static electricity different from current electricity?
  - What are conductors? Give examples.
  - What are insulators? Give examples.
- What constitutes an electric current?
  - Name the SI unit of electric charge.
  - Which is bigger – C coulomb of charge or a charge of an electron?
  - How much is the charge on an electron? Can a charge less than this value exist?
  - What is the number of electrons constituting one coulomb of charge?
- Define electric current.
  - Name the SI unit of current. Define one ampere.
  - Is electric current a scalar or vector quantity?
- What does an electric circuit mean?
  - When does the current flow in an electric circuit?
  - How can the current be kept continuous in a conductor?
  - Which particles constitute current in a metallic conductor?
- Define potential difference.
  - Name the SI unit of potential difference.
  - What is meant by saying that a potential difference between two points is 1 volt?
  - What is the relationship between work done, potential difference and charge moved?

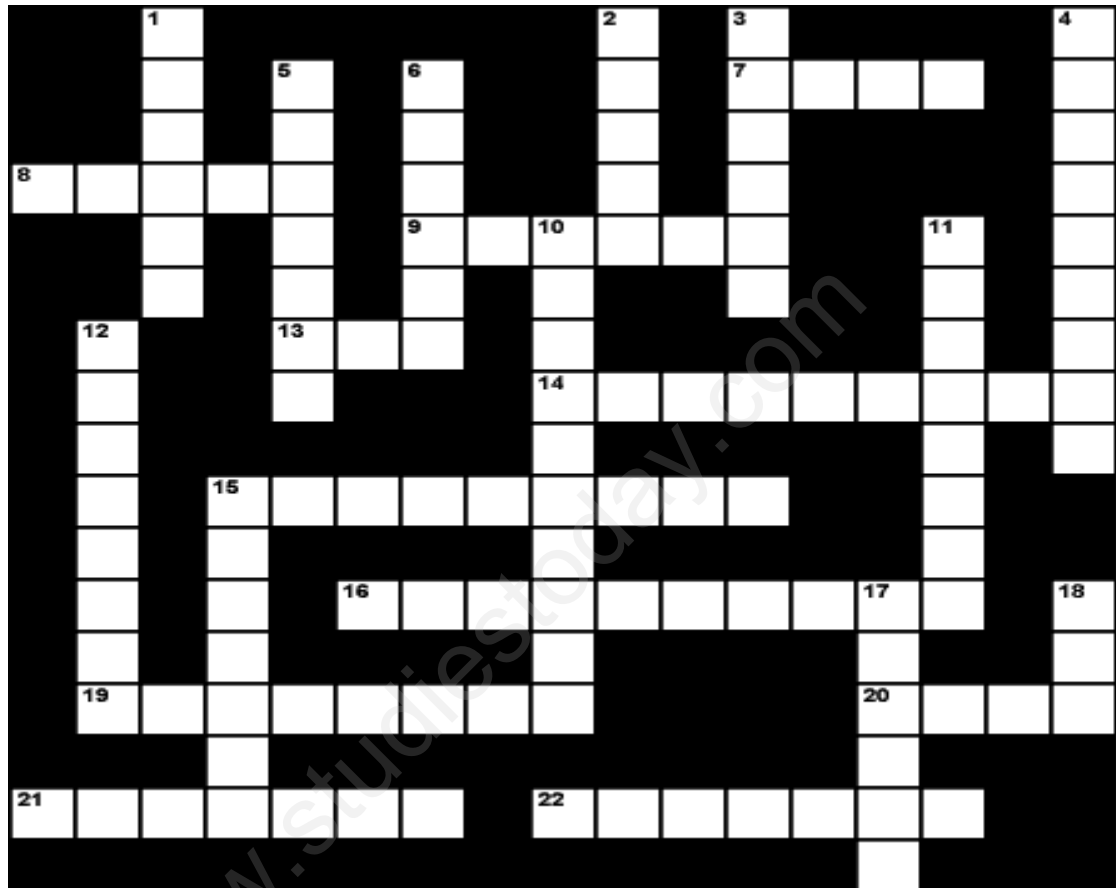
**ORAL QUESTIONS**

1. Which unit is equivalent of joule / coulomb?
2. How does the resistance of a wire depend on its length?
3. How does the resistance of a wire depend on its area of cross – section?
4. When are resistors said to be connected in series?
5. When are resistors said to be connected in parallel?
6. Why is tungsten suitable for making the filament of a bulb?
7. Why is tungsten not used as a fuse wire?
8. Alloys are preferred over metals for making the heating elements of heaters. Why?
9. How is the direction of electric current related to the direction of flow of electrons in a wire?
10. Should the heating element of an electric iron be made of iron, silver or nichrome wire?

**QUIZ – WHO AM I**

1. I am equal to the charge carried by  $6.25 \times 10^{18}$  electrons.
2. I am the rate of flow of charge through any section of a conductor.
3. I am same as coulomb/second.
4. I am closed path along which electric charges can flow.
5. I am equal to the work done per unit charge from point to another.
6. I am same as joule/coulomb.
7. I oppose the flow of charges through any conductor.
8. I am same as volt/ampere.
9. I relate potential difference with current for a given resistance.
10. I am used to measure potential difference between two points of a circuit.

## CROSSWORD PUZZLE- ELECTRICITY



## Across

- 7.** Unit of electrical power, named after the Scottish inventor of the steam engine  
**8.** a rotating machine that transforms electrical energy into mechanical energy  
**9.** The kind of electricity you create by rubbing a balloon on your head  
**13.** Atom or group of atoms that carries a positive or negative electric charge as a result of having lost or gained one or more electrons  
**14.** Emission of radiant energy in the form of waves or particles  
**15.** It transmits electricity, like copper  
**16.** Opposition to the passage of an electric current  
**19.** Elementary particle consisting of a charge of negative electricity

## Down

- 1.** Elementary particle that carries a positive charge  
**2.** Electromagnetic radiation in the wavelength range including infrared, visible, ultraviolet, and X-rays  
**3.** Device for making, breaking, or changing the connections in an electrical circuit  
**4.** Flash produced by a discharge of atmospheric electricity  
**5.** Complete path of an electric current including the source of electric energy  
**6.** Inventor of the electric light bulb  
**10.** Force acting on particles of

- 20.** Smallest particle of an element that can exist either alone or in combination  
**21.** Uncharged elementary particle  
**22.** Electric potential or potential difference

matter, tending to draw them together

- 11.** Electrical charge with more protons than electrons  
**12.** Electrical charge with more electrons than protons  
**15.** Electrical flow through a conductor  
**17.** Definite quantity of electricity  
**18.** Unit of electrical resistance

### ANSWERS - ELECTRICITY CROSSWORD

