

Chapter - 12

Electricity

(Assertion and Reasoning Questions)

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a)** Both A and R are true and R is the correct explanation of A.
- (b)** Both A and R are true but R is not the correct explanation of A.
- (c)** A is true but R is false.
- (d)** A is false but R is true.

Q.1. Assertion (A) : Tungsten metal is used for making filaments of incandescent lamps.

Reason (R) : The melting point of tungsten is very low.

Q.2. Assertion (A) : If a graph is plotted between the potential difference and the current flowing, the graph is a straight line passing through the origin.

Reason (R) : The current is directly proportional to the potential difference.

Q.3. Assertion (A) : Longer wires have greater resistance and the smaller wires have lesser resistance.

Reason (R) : Resistance is inversely proportional to the length of the wire.

Q.4. Assertion (A) : Alloys are commonly used in electrical heating devices, like electrical iron, toasters etc.

Reason (R) : Alloys do not oxidise (burn) readily at high temperatures.

Q.5. Assertion (A) : When the resistances are connected end-to-end consecutively, they are said to be in series.

Reason (R) : In case the total resistance is to be increased, then the individual resistances are connected in series.

Q.6. Assertion (A) : When the resistances are connected between the same two points, they are said to be connected in parallel.

Reason (R) : In case the total resistance is to be decreased, then the individual resistances are connected in parallel.

Q.7. Assertion (A) : A cell is a device which converts chemical energy into electrical energy.

Reason (R) : Cell maintains a constant potential difference between its terminals for a long time.

Q.8. Assertion (A) : The resistivity of a substance does not depend on the nature of the substance and temperature.

Reason (R) : The resistivity of a substance is a characteristic property of the material.

Q.9. Assertion (A) : Tungsten metal is used for making filaments of incandescent lamps.

Reason (R) : The melting point of tungsten is very low.

Q.10. Assertion (A) : The fuse is placed in series with the device.

Reason (R) : Fuse consists of a piece of wire made of a metal or an alloy of appropriate melting point.

Q.11. Assertion (A) : The coil of a heater is cut into two equal halves and only one of them is used into heater. The heater will now require half the time to produce the same amount of heat.

Reason (R) : The heat produced is directly proportional to square of current.

Q.12. Assertion (A) : The wires supplying current to an electric heater are not heated appreciably.

Reason (R) : Resistance of connecting wires is very small and $H \ll R$.

Q.13. Assertion (A) : A current carrying wire should be charged.

Reason (R) : The current in a wire is due to flow of free electrons in a definite direction.

Q.14. Assertion (A) : Electron has a negative charge.

Reason (R) : Electrons move always from a region of higher potential to a region of lower potential.

Q.15. Assertion (A) : Heater wire must have high resistance and high melting point.

Reason (R) : If resistance is high, the electric conductivity will be less.

Q.16. Assertion (A) : In a chain of bulbs, 50 bulbs are joined in series. One bulb is removed now and circuit is completed again. If the remaining 49 bulbs are again connected in series across the same supply, then light gets decreased in the room.

Reason (R) : Net resistance of 49 bulbs will be less than 50 bulbs.

Q.17. Assertion (A) : Fuse wire must have high resistance and low melting point.

Reason (R) : Fuse is used for small current flow only.

Q.18. Assertion (A) : The connecting wires are made of copper.

Reason (R) : The electrical conductivity of copper is high.

Q.19. Assertion (A) : Current is the rate of flow of charge.

Reason (R) : Electric current will not flow between two charged bodies when connected, if they are at same potential.

Q.20. Assertion (A) : A bird perches on a high power line and nothing happens to the bird.

Reason (R) : The circuit is incomplete for the bird sitting on high power line.

Q.21. Assertion (A) : When a wire is stretched to three times of its length, its resistance becomes 9 times.

Reason (R) : Resistance is directly proportional to length of wire.

Q.22. Assertion (A) : It is advantageous to transmit electric power at high voltage.

Reason (R) : High voltage implies high current.

Q.23. Assertion (A) : Bending a wire does not affect electrical resistance.

Reason (R) : Resistance of a wire is proportional to resistivity of material.

Q.24. Assertion (A) : A voltmeter and ammeter can be used together to measure resistance but not power.

Reason (R) : Power is proportional to voltage and current.

Q.25. Assertion (A) : The 200 W bulbs glows with more brightness than 100 W bulbs.

Reason (R) : A 100 watt bulb has more resistance than a 200 W bulb.

Q.26. Assertion (A) : If 10 bulbs are connected in series and one bulb fused, then the remaining 9 bulbs will not work.

Reason (R) : Bulb of higher wattage will give less bright light.

Q.27. Assertion (A) : Good conductors of heat are also good conductors of electricity and vice versa.

Reason (R) : Mainly electrons are responsible for conduction.

-X-X-X-

ANSWER KEY

Q.1 : (c)	Q.2 : (a)	Q.3 : (c)	Q.4 : (a)
Q.5 : (b)	Q.6 : (b)	Q.7 : (b)	Q.8 : (d)
Q.9 : (c)	Q.10 : (b)	Q.11 : (b)	Q.12 : (a)
Q.13 : (d)	Q.14 : (c)	Q.15 : (b)	Q.16 : (d)
Q.17 : (c)	Q.18 : (a)	Q.19 : (b)	Q.20 : (a)
Q.21 : (b)	Q.22 : (c)	Q.23 : (b)	Q.24 : (d)
Q.25 : (b)	Q.26 : (b)	Q.27 : (a)	