



MODERN SCIENCE ACADEMY

14. "CURRENT ELECTRICITY"

Sr.	Statements	A	B	C	D
1	An electric current in conductors is due to flow of:	+ve ions	-ve ions	+ve charges	free electrons
2	What is the voltage across 6 Ω resistor when 3 A of current passes through it?	2 V	9 V	18 V	36 V
3	What happens to brightness of lamps connected in series as more and more lamps are added?	increases	decreases	remains the same	cannot be predicted
4	Electric potential and e.m.f. :	are the same terms	are different terms	have different units	both B and C
5	When we double the voltage in a circuit, we double:	the current	the power	the resistance	both A & B
6	If we double both current and voltage in a circuit while keeping its resistance constant, the power:	remains unchanged	halves	doubles	quadruples
7	What is power rating of a lamp connected to a 12 V source when it carries 2.5 A?	4.8 W	14.5 W	30 W	60 W
8	The combined resistance of two identical resistors connected in series is 8 Ω . Their combined resistance in a parallel arrangement will be:	2 Ω	4 Ω	8 Ω	12 Ω
9	Formula for current is:	$I=Qt$	$I=Q/t$	$I=t/Q$	All of these
10	SI unit of current is:	coulomb	ampere	volt	farad
11	1 milli Ampere is:	10^3 A	10^{-3} A	10^6 A	10^{-6} A
12	If 0.5 C charge passes through a wire in 10 seconds, then current will be:	20 A	0.05 A	50 mA	both B & C
13	A 100 W bulb is connected to 250 V supply. The current flowing through the bulb is:	0.4 A	2.5 A	4.8 A	14.5 A
14	The unit of potential difference is:	joule	coulomb	farad	volt
15	Formula of e.m.f. is equal to:	$E=J/Q$	$E=W/I$	$E=W/Q$	$E=Q/I$
16	1 volt is equal to:	J	Jm^{-1}	Js^{-1}	JC^{-1}
17	An ideal voltmeter has a resistance :	very low	very large	nothing	low
18	If emf of a battery is 2 V, then the energy supplied by battery is when one coulomb of charge flows through the closed circuit.	2 J	2.8 J	4 J	5 J
19	Formula for Ohm's Law is:	$V=IR$	$V=I/R$	$I=V/R$	both A & C
20	Unit of resistance is:	farad	coulomb	ohm	volt
21	Which one is Ohmic in nature?	thermistor	filament lamp	fixed resistor	diode
22	A current of 10 mA is flowing through a wire for 10 s. What is the amount of charge flowing through the wire?	10^{-3} C	10^{-2} C	10^{-1} C	10 C
23	1A current is passing through a conductor. How many electrons pass through its any cross-sectional area in one second?	1.6×10^{-19} electrons	6.25×10^{-19} electrons	1 electron	6.25×10^{18} electrons
24	If voltage applied on the bulb is doubled then its power becomes:	double	half	4 times	one fourth
25	If we increase the area of wire then its resistance:	increases	decreases	no change	vanishes
26 have very large value of resistance.	conductor	circuit	insulator	none
27	When resistances are connected in series, the current passing through them is:	different	zero	same	none
28	Two resistances of 6 k Ω and 12 k Ω are connected in parallel across a 6 volts battery. The potential difference across 6 k Ω resistance is:	2 V	4 V	6 V	12 V
29	Mathematical form of Joule's law is:	$W=I^2Rt$	$W=IR^2t$	$W=I^2R^2t$	$W=IRt$
30	Electron volt is NOT the unit of:	electric energy	work	electric potential	heat energy



MODERN SCIENCE ACADEMY

31	Which is not true for electric power?	$P=I^2R$	$P=QV/t$	$P=VR$	$P=VI$
32	1 kWh=	2 MJ	3.6 MJ	3 MJ	4.6 MJ
33	Electricity meter measures units in:	watt	watt hour	kilowatt hour	megawatt
34	House safety wiring is connected in:	parallel	series	at random	gates
35	Potential of neutral wire is:	1 V	5 V	0 V	220 V
36	Alternating current frequency in Pakistan is:	60 Hz	50 Hz	70 Hz	80 Hz
37	By applying potential difference of 10V across a conductor, a current of 1.5 A passes through it. How much energy would be obtained from the current in 2 minutes?	18 J	180 J	18 kJ	1.8 kJ
38	ohm-m is the unit of:	electric energy	specific resistance	electric potential	heat energy
39	If 4 kilo-ohm and 2 kilo-ohm resistances are connected in parallel, their equivalent resistance is:	6 kilo-ohm	1.3 kilo-ohm	8 kilo-ohm	2 kilo-ohm
40	If current through a fixed resistance is doubled then energy dissipation is:	doubles	half	4 times	one-fourth
41	Fuse is always connected in series with:	live wire	earth wire	neutral wire	shunt wire
42	With increase in temperature of thermistors, its resistance _____	increases	decreases	remains same	may increase or decrease
43	Batteries are rated with unit 'ampere-hour', it is the unit of:	charge	current	power	energy
44	When connected to a battery, a light bulb glows brightly. If the battery is reversed and reconnected to the bulb, the bulb will glow:	brighter	dimmer	with the same brightness	and fuse
45	The resistance of wire will increase by decreasing:	temperature	length	diameter	A & B
46	Electricity main supply meter measures it in units of "kilowatt-hour", it is the unit of:	charge	current	power	energy
47	The device that is used to protect a circuit against overload is:	heater	fuse	lamp	all of these
48	Which of the following represents one-ohm:	VA^{-1}	JS^{-1}	WA^{-1}	JC^{-1}
49	Two resistances of 1 ohm are connected in parallel, the equivalent resistance is:	2 Ω	1.5 Ω	1 Ω	0.5 Ω

"Important Short Questions"

- 1) What is difference between electronic and conventional current?
- 2) Can current flow through a circuit without potential difference?
- 3) Why in conductors charge is transferred by free electrons rather than positive charges?
- 4) As water is made of atoms having protons (charge +e) and electrons (charge -e), does the water flowing through pipe carry an electric current? Explain.
- 5) What is difference between cell and battery?
- 6) What is galvanometer? How can it be converted into ammeter and voltmeter?
- 7) Briefly explain ammeter and voltmeter.
- 8) In order to measure current in a circuit, why ammeter is always connected in series?
- 9) In order to measure voltage in a circuit, why voltmeter is always connected in parallel?
- 10) What do you mean by the term e.m.f.? Is it really a force?
- 11) How can we differentiate between e.m.f. and potential difference?
- 12) Differentiate Ohmic and Non-Ohmic conductors.
- 13) What is difference between conductors and insulators.
- 14) Which metal is used in filament of bulb and why?
- 15) Define resistivity.



MODERN SCIENCE ACADEMY

- 16) If aluminum and copper wires of the same length have the same resistance, which has the larger diameter? Why?
- 17) What is resistance across open switch and close switch of a circuit?
- 18) How do jewelers identify diamond as real or fake one?
- 19) Write advantages of parallel circuit.
- 20) A bird is sitting on a high voltage transmission line, but it is not electrocuted. Why? When it tries to fly, it touches another bird that is sitting on second transmission line of the pole. Now, it is heavily electrocuted. Why?
- 21) You are given five resistances of different magnitudes. But you are asked to form a circuit whose resistance is smaller than any given resistance. How can you make such circuit with given resistances?
- 22) You are given n wires, each of resistance R . What is the ratio of maximum to minimum resistances obtainable from these wires?
- 23) Qurat-ul-Ain needs a $100\text{-}\Omega$ resistor for a circuit, but she only has a box of $300\text{-}\Omega$ resistors. What can she do?
- 24) Two electric bulbs marked $100\text{ W}, 220\text{ V}$ and $200\text{ W}, 220\text{ V}$ have tungsten filaments of the same length. Which bulb will have thicker filament?
- 25) A number of light bulbs are connected to a single power outlet. Will they provide more illumination when connected in series or in parallel? Why?
- 26) Define electrical power. Prove that " $P=I^2R$."
- 27) Define kilowatt-hour. Prove that $1\text{kWh}=3.6\text{ MJ}$.
- 28) How many watt-hours are there in 1000 joules?
- 29) Explain the energy dissipation in a resistance. What is Joule's law?
- 30) What is difference between A.C and D.C?
- 31) Differentiate between live wire and neutral wire.
- 32) What is fuse? Explain its working.
- 33) Does fuse in a circuit control the potential difference or the current?
- 34) Briefly explain circuit breakers.
- 35) Why we are advised "not to touch electric switches with wet hand, first dry your hands"?
- 36) Sometimes, if your one of the car's head lamps is burnt or not working but second lamp still gives light. What do you conclude about connection of head lamps from this observation?
- 37) A car has two headlights, when the filament in one headlight burns out, the other headlight stays on. Are the headlights connected in series or in parallel?
- 38) An electrician working on "live" circuits wears insulated shoes and keeps one hand behind his or her back. Why?
- 39) Explain why is it dangerous to turn on a light bulb when you are in a bath tub?
- 40) Why circuit breaker, fuses and switches are installed to 'live wire'?

"Important Long Questions"

- 1) How can you compare emf and potential difference.
- 2) State Ohm's Law. What are its limitations? What are Ohmic and Non-Ohmic conductors?
- 3) Write factors affecting resistance. Prove that $R = \rho \frac{L}{A}$.
- 4) What is meant by series combination of resistors?
- 5) What is meant by parallel combination of resistors?
- 6) Write a note on safe uses of electricity in homes.