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CURRENT ELECTRICITY

1. The reciprocal of specific resistance is

- (a) conductive resistance
- (b) specific conductance
- (c) conductive resistance
- (d) plate resistance

2. Three resistance, each of $1\ \Omega$ in joined parallel.

Three such combinations are put in series. Then the resultant resistance is

- (a) $9\ \Omega$
- (b) $3\ \Omega$
- (c) $1\ \Omega$
- (d) $1/3\ \Omega$

3. A copper wire of length 1 m and radius 1 mm is joined in series with an iron wire of length 2 m and radius 3 mm and a current is passed through the wires. The ratio of the current densities in the copper and iron wire is

- (a) 18:1
- (b) 9:1
- (c) 6:1
- (d) 2:3

4. The resistance of a galvanometer is $25\ \Omega$ and it require $50\ \mu\text{A}$ for full deflection. The value of shunt resistance required to convert it into an ammeter of 5A is

- (a) $2.5 \times 10^{-4}\ \Omega$
- (b) $1.25 \times 10^{-4}\ \Omega$
- (c) $0.05\ \Omega$
- (d) $2.5\ \Omega$

5. A flow of 10^7 electron per second in a conduction wire constitutes a current of

- (a) $1.6 \times 10^{-26}\ \text{A}$
- (b) $1.6 \times 10^{12}\ \text{A}$
- (c) $1.6 \times 10^{-12}\ \text{A}$
- (d) $1.6 \times 10^{26}\ \text{A}$

6. A Wire 50 cm long and $1\ \text{mm}^2$ in cross section carries a current of 4 A when connected to a 2 V battery. The resistivity of the wire is

- (a) $2 \times 10^{-7}\ \Omega\text{m}$
- (b) $5 \times 10^{-7}\ \Omega\text{m}$
- (c) $4 \times 10^{-6}\ \Omega\text{m}$
- (d) $1 \times 10^{-6}\ \Omega\text{m}$

7. N equal resistors are first connected in series and then in parallel. The ratio of the equivalent resistance in the two cases is

- (a) n
- (b) $1/n^2$
- (c) n^2
- (d) $1/n$

8. Two resistance, $4\ \Omega$ and $6\ \Omega$ are in series and a 10 resistor is in parallel to the combination. The resultant resistance is

- (a) $5\ \Omega$
- (b) $8\ \Omega$
- (c) $12\ \Omega$
- (d) $20\ \Omega$

9. A Galvanometer is converted into an ammeter when we connect

- (a) high resistance in series
- (b) high resistance in parallel
- (c) low resistance in series
- (d) low resistance in parallel

10. The reciprocal of resistance is

- (a) conductance
- (b) resistivity
- (c) conductivity
- (d) none of the above

11. When a potential difference is applied across a copper wire, the drift velocity of the electron is v. If the same potential difference is applied across another copper wire of the same length but double the diameter, the drift velocity will be

- (a) $2v$
- (b) $v/2$
- (c) v
- (d) $v/4$

12. Which of the following statement is not true?

- (a) Conductance is the reciprocal of resistance and is measured in Siemens
- (b) ohm's law is not applicable at very low and very high temperature
- (c) ohm's law is applicable to semiconductors
- (d) ohm's law is not applicable to electron tubes discharge tubes and electrolytes

13. The drift velocity of electron in a wire of radius r is proportional to

- (a) r
- (b) r^2
- (c) r^3
- (d) None

14. Kirchoff's first law, i.e. $\sum I = 0$ at the junction deals with conservation of

- (a) charge
- (b) energy
- (c) momentum
- (d) angular momentum

15. Three copper wire have lengths and cross-sectional areas (L, A) , $(2L, A/2)$ and $(L/2, 2A)$

.Resistance is minimum for

- (a) wire of cross-sectional area $A/2$
- (b) wire of area cross sectional A
- (c) wire of cross sectional area $2A$
- (d) same in all three cases

16. The resistance of a material increases with temperature it is a

- (a) metal
- (b) insulator
- (c) semiconductor
- (d) semi-metal

17. A wire of radius r has resistance R. If it is stretched uniformly to a wire of radius r plus r/2 then the resistance of the wire becomes

- (a) $2R$
- (b) $4R$
- (c) $16R$
- (d) $8R$

18. Five cells, each of emf E are joined in parallel. The total emf of combination is

- (a) $5E$
- (b) $E/5$
- (c) E
- (d) $E/2$

19. Carbon resistance of colour bands in order yellow brown, red its resistance is

- (a) $41\ \Omega$
- (b) $41 \times 10^{-2}\ \Omega$

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(c) $41 \times 10^3 \Omega$

(d) 4.2Ω

20. The resistivity ρ of a wire depends on its

- (a) length (b) area of a cross section (c) shape
(d) material

21. A wire of resistance R is cut into n equal parts

. These parts are then connected in parallel. The equivalent resistance of the combination will be

- (a) nR (b) $\frac{R}{n}$ (c) $\frac{n}{R}$ (d) $\frac{R}{n^2}$

22. The conductivity of a superconductor is

- (a) infinite (b) very large (c) very small (d) zero

23. The resistivity of potentiometer wire is $40 \times$

10^{-8} Ohm-m and its area of cross section is $8 \times$

10^{-6} m^2 . If 0.2 ampere current is flowing through the wire the potential gradient will be

- (a) 10^{-2} volt/m (b) 10^{-1} volt/m

- (c) $3.2 \times 10^{-2} \text{ volt/m}$ (d) 1 volt/m

24. The resistance of an ideal voltmeter is

- (a) zero (b) very low (c) very high (d) infinite

25. Resistance of copper coil is 4.64Ω at 40°C and

5.6Ω at 100°C then its resistance at 0°C

- (a) 5.12 (b) 4.2 (c) 4 (d) 0.96

26. Carriers of electric current in superconductors are

- (a) electrons (b) protons

- (c) holes (d) phonons

27. Electromotive force is most closely related to

- (a) electric field (b) magnetic field

- (c) potential difference (d) mechanical force

28. Constantan wire is used in making standard

resistance because its

- (a) specific resistance is low (b) density is high

- (c) temperature coefficient of resistance is negligible

- (d) melting point is high

29. These similar cells, each of emf 2 V and internal

resistance $r \Omega$ send the same current through an

external resistance of 2Ω , when connected in series

or in parallel. The strength of the current flowing

through the external resistance is

- (a) 2 A (b) 0.75 A (c) 1 A (d) 1.5 A

30. Potentiometer measures potential more

accurately because

- (a) it measures potential in the open circuit

- (b) it uses sensitive galvanometer for null detection

- (c) it uses high resistance potentiometer wire

- (d) it measures potential in the closed circuit