1. The conventional current through a conductor always flows from its

(a) lower potential end to higher potential end
(b) higher potential end to lower potential end
(c) left end to right end
(d) none of these

2. An electric current in a solid metal conductor is a movement of

(a) protons (b) electrons
(c) metal atoms (d) metal ions

3. The electrical conduction takes place by the movement of both positive and negative ions in

(a) metals (b) liquids
(c) gases (d) both liquids and gases

4. According to Joule's law, the heat produced in a current carrying conductor is

(a) directly proportional to current
(b) directly proportional to the square of current
(c) inversely proportional to the resistance
(d) none of these

5. The heat produced in time *t* by a current *I* flowing through a resistance *R* is

(a) $I\,R\,t$ (b) $I^2\,R/t$ (c) $I^2\,Rt$ (d) $I\,R/r$

6. When a conductor is connected to a battery, the free electrons in the conductor experience a force

(a) in the direction of the electric field
(b) opposite to the electric field
(c) perpendicular to the electric field
(d) in arbitrary direction

7. The conductivity of a metal decreases with increase in temperature because

(a) root mean square velocity of electrons increases
(b) the number of free electrons decreases
(c) the number of the electrons increases
(d) the mean time between collisions of electrons with atoms decreases

8. Choose the correct relation:

(a) coulomb = ampere / second
(b) watt = coulomb / ampere
(c) volt = ampere / ohm
(d) ampere = coulomb / second

9. If the current through a resistance is halved, then

(a) the power is halved
(b) the heat dissipated is halved
(c) the potential difference is halved
(d) none of these

10. Electrolysis is the _____ effect of current

(a) heating (b) magnetic
(c) chemical (d) electric

11. Charges in motion produce

(a) electric field
(b) magnetic field
(c) both electric as well as magnetic field
(d) neither electric nor magnetic field.

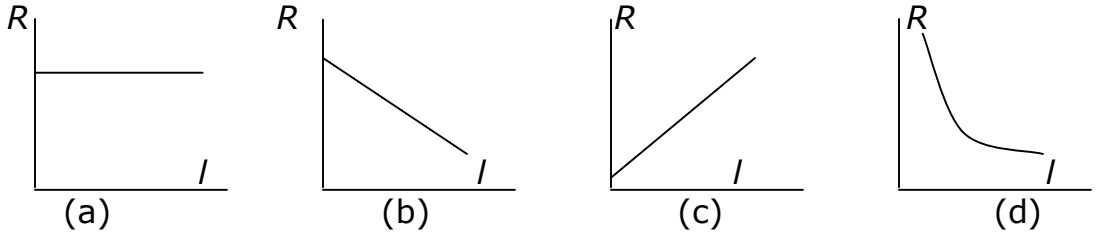
12. When the temperature of a conductor increases, its resistance

(a) decreases
(b) increases
(c) first increases and then decreases
(d) remains constant

13. The resistance of a conductor increases by

(a) decreasing the length
(b) decreasing the thickness
(c) increasing both length and thickness
(d) increasing length and decreasing thickness

14. Six equal masses of some metal wire were made into six different lengths of wire of uniform cross-sectional area. The resistance *R* and length *l* of each wire was measured, which graph best illustrates the results?



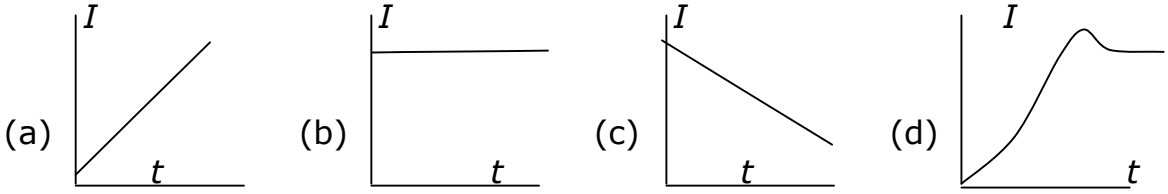
15. A wire of uniform area of cross-section '*A*' and length *L* has a resistance *R*. When cut into three pieces, the resistivity of each part

(a) decreases by 1/3
(b) increases by 3
(c) remains the same
(d) none of these

16. The SI unit of resistivity is

(a) Ω - m^2 (b) Ω - m^{-1}
(c) Ω - m (d) Ω - cm

17. Which of the graphs given below best shows the variation of current with time in a tungsten filament lamp, from the moment the current flows?



18. Resistivity is the reciprocal of

(a) resistance (b) conductance
(c) conductivity (d) permittivity

19. Which of the followings is the best material for making wires?

(a) magnin (b) constantan
(c) copper (d) aluminum

20. A cylindrical copper rod is re-formed to twice its original length. Which one of the followings statements describes the way in which resistance is changed?

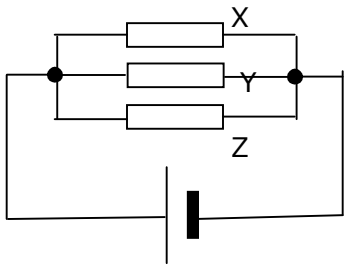
(a) The resistance remains constant.
(b) The resistance increases by a factor of 2.
(c) The resistance increases by a factor of 4.
(d) The resistance increases by a factor of 8.

21. The electrical resistance of a metal wire decreases when it is 1. shortened 2. cooled 3. made thinner

(a) 1 and 2 (b) 2 and 3
(c) 1 only (d) 3 only

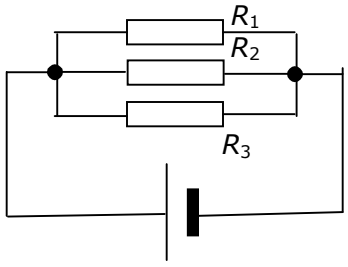
22. If equal current flows through each of the resistors X, Y and Z, which one of the following statements is not correct?

(a) The resistors have equal resistance
(b) The potential drop across each resistance is the same
(c) Each resistor will dissipate same power
(d) Removing X reduces the Resistance of the circuit



23. For the circuit shown, which of the following statements is true?

(a) Same current flows through each resistance
(b) Potential difference across each resistor is different
(c) Different current is passing through each resistor
(d) Current passes through the smallest resistance only



24. An apparatus used to compare the emf of two cells is a

(a) Wheatstone bridge (b) potentiometer
(c) potential divider (d) voltmeter

25. An instrument, which can measure potential without drawing any current, is

(a) galvanometer (b) ohm meter

(c) Wheatstone bridge (d) potentiometer

26. Which of the following changes to a wire will double its resistance?

	Area	**Length**
(a)	double	double
(b)	double	halve
(c)	halve	no change
(d)	halve	halved

27. Why is tungsten used for filament of an electric bulb in preference to copper?

(a) Tungsten is better conductor
(b) Tungsten has a higher melting point
(c) Tungsten is more easily bent to required shape
(d) Tungsten is cheaper and easily available

28. SI unit of temperature coefficient of resitivity is

(a) Ω–m (b) $\Omega\ m^{-1}$
(c) $\Omega\ K^{-1}$ (d) K^{-1}

29. The temperature coefficient of resistivity of a conductor is determined from the formula

(a) $\alpha = \frac{R_t}{R_o t}$ (b) $\alpha = \frac{R_t - R_o}{R_o t}$

(c) $\alpha = \frac{R_t - R_o}{t}$ (d) $\alpha = \frac{R_t}{(R_t - R_o)t}$

30. Substances like germanium and silicon have

(a) negative temperature coefficient
(b) positive temperature coefficient
(c) zero temperature coefficient
(d) infinite resistance

31. Siemen is the unit of

(a) resistance (b) conductance
(c) resistivity (d) conductivity

32. The unit of conductivity is

(a) Siemen m^{-1} (b) 1 mho m^{-1}
(c) ohm m^{-1} (d) Both siemen m^{-1} and mho m^{-1}

33. A 15.75 kΩ resistance has a tolerance band of gold colour. The actual resistance of the resistor is

(a) 14.75 kΩ (b) 14.25 kΩ

(c) 13.5 k Ω (d) between 14.75 k Ω & 16.55 k Ω

34. Which of the following statements applies to a thermistor?

(a) Its resistance increases when more light falls on it.
(b) Its resistance decreases as more light falls on it.
(c) Its resistance decreases when its temperature increases.
(d) Its resistance increases when its temperature decreases.

35. Electrical energy is measured in units of

(a) watt (b) horse power
(c) kilowatt (d) kilowatt hour

36. The relation between joule and kilowatt hour is

(a) 1 kWh = 3.6×10^5 J (b) 1 kWh = 3.6×10^6 J
(c) 1 J = 3.6×10^5 kWh (d) 1 J = 3.6×10^6 kWh

37. What is the cost of operating a 100 W bulb for 10 hours at Rs. 3.0 per kWh?

(a) Rs. 0.30 (b) Rs. 3.00
(c) Rs. 30.0 (d) None of these.

38. The largest number of 100 W bulbs which can be safely run from a 240 V supply with 5 A fuse is

(a) 4 (b) 5
(c) 12 (d) 3

39. The terminal potential difference of a short circuited battery of em*f* *E* is equal to

(a) *E* (b) 2 *E*
(c) *E*/2 (d) 0

40. In a balanced Wheatstone bridge containing resistance R_1, R_2, R_3 and R_4 the current through the galvanometer is zero. The galvanometer current will still be zero when

(a) R_1 and R_2 are interchanged
(b) R_3 and R_4 are interchanged
(c) R_1 and R_3 are interchanged
(d) battery and galvanometer are interchanged

Key to Test Chapter 13

1	**b**	21	**a**
2	**b**	22	**d**
3	**d**	23	**c**
4	**b**	24	**b**
5	**c**	25	**d**
6	**c**	26	**c**
7	**d**	27	**b**
8	**d**	28	**d**
9	**c**	29	**b**
10	**c**	30	**a**
11	**c**	31	**b**
12	**b**	32	**d**
13	**d**	33	**d**
14	**c**	34	**c**
15	**c**	35	**d**
16	**c**	36	**b**
17	**d**	37	**b**
18	**c**	38	**c**
19	**c**	39	**d**
20	**c**	40	**d**