QB365 Question Bank Software Study Materials

Current Electricity 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

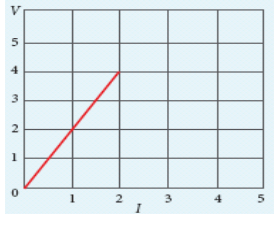
Physics

Total Marks : 50

Multiple Choice Question

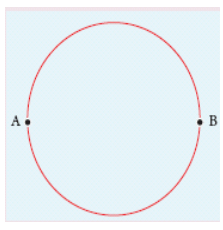
50 x 1 = 50

1) The following graph shows current versus voltage values of some unknown conductor. What is the resistance of this conductor?



(a) 2 ohm (b) 4 ohm (c) 8 ohm (d) 1 ohm

2) A wire of resistance 2 ohms per meter is bent to form a circle of radius 1m. The equivalent resistance between its two diametrically opposite points, A and B as shown in the figure is



(a) $\pi\Omega$ (b) $\frac{\pi}{2}\Omega$ (c) $2\pi\Omega$ (d) $\frac{\pi}{4}\Omega$

3) A toaster operating at 240 V has a resistance of 120 Ω. The power is _____.

(a) 400 W (b) 2 W **(c) 480 W** (d) 240 W

4) A carbon resistor of (47 ± 4.7) k Ω to be marked with rings of different colours for its identification. The colour code sequence will be _____.

(a) Yellow – Green – Violet – Gold **(b) Yellow – Violet – Orange – Silver** (c) Violet – Yellow – Orange – Silver

(d) Green – Orange – Violet - Gold

5) What is the value of resistance of the following resistor?

(a) 100 k Ω (b) 10 k Ω (c) 1 k Ω (d) 1000 k Ω

6) Two wires of A and B with circular cross section made up of the same material with equal lengths. Suppose $R_A = 3\ R_B$, then what is the ratio of radius of wire A to that of B?

(a) 3 (b) $\sqrt{3}$ **(c)** $\frac{1}{\sqrt{3}}$ (d) $\frac{1}{3}$

7) A wire connected to a power supply of 230 V has power dissipation P_1. Suppose the wire is cut into two equal pieces and connected parallel to the same power supply. In this case power dissipation is P_2. The ratio $\frac{P_2}{P_1}$ is _____.

(a) 1 (b) 2 (c) 3 **(d) 4**

8) In India electricity is supplied for domestic use at 220 V. It is supplied at 110 V in USA. If the resistance of a 60 W bulb for use in India is R, the resistance of a 60 W bulb for use in USA will be _____.

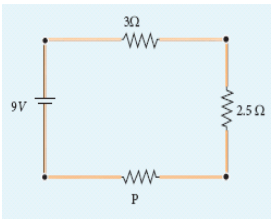
(a) R (b) 2R **(c)** $\frac{R}{4}$ (d) $\frac{R}{2}$

9) In a large building, there are 15 bulbs of 40 W, 5 bulbs of 100 W, 5 fans of 80 W and 1 heater of 1 kW are connected. The voltage of electric mains is 220 V. The maximum capacity of the main fuse of the building will be _____.

(a) 14 A (b) 8 A (c) 10 A **(d) 12 A**

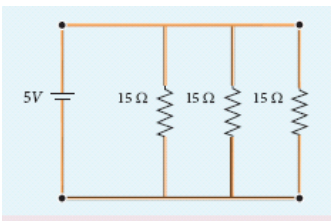
(a) 1 A (b) 3 A (c) 10 A **(d) 12 A**

10) There is a current of 1.0 A in the circuit shown below. What is the resistance of P ?



(a) 1.5 Ω (b) 2.5 Ω **(c) 3.5 Ω** (d) 4.5 Ω

11) What is the current drawn out from the battery?



(a) 1 A (b) 2 A (c) 3 A (d) 4 A

12) The temperature coefficient of resistance of a wire is 0.00125 per °C. At 20°C, its resistance is 1 Ω. The resistance of the wire will be 2 Ω at _____.

(a) 800 °C (b) 700 °C (c) 850 °C **(d) 820 °C**

13) The internal resistance of a 2.1 V cell which gives a current of 0.2 A through a resistance of 10 Ω is _____.

(a) 0.2 Ω **(b) 0.5 Ω** (c) 0.8 Ω (d) 1.0 Ω

14) A piece of copper and another of germanium are cooled from room temperature to 80 K. The resistance of _____.

(a) each of them increases (b) each of them decreases (c) copper increases and germanium decreases

(d) copper decreases and germanium increases

15) In Joule's heating law, when R and t are constant, if the H is taken along the y axis and I^2 along the x axis, the graph is _____.

(a) straight line (b) parabola (c) circle (d) ellipse

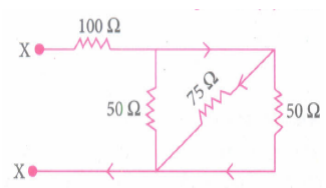
16) An electron gun in a TV shoots out a beam of electrons. The beam current is 10μA. The charge that strikes the screen in 1 minute is _____.

(a) $+600\mu C$ **(b)** $-600\mu C$ (c) $+10\mu C$ (d) $-10\mu C$

17) A metallic block has no potential difference applied across it, then the mean velocity of free electrons is _____.

(a) proportional to T (b) proportional for $\sqrt{T}$ (c) finite but independent of temperature **(d) zero**

18) In an electrical arrangement as shown the equivalent resistance between X and Y will be



(a) 158.75Ω **(b)** 118.75Ω (c) 218.75Ω (d) 318.75Ω

19) A square aluminum rod is 1 m long and 5 mm on edge. What must be the radius of another aluminum rod whose length is 1 m and which has the same resistance as that of square Aluminum rod?

(a) 1.4 mm **(b) 2.8 mm** (c) 4.2 mm (d) 5.6 mm

20) Kirchoff's I law i.e, $\Sigma i = 0$ at a junction, deals with the conservation of _____.

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

21) The potential gradient of the potentiometer wire depends on _____.

(a) only on the current that flows (b) only on the resistance per unit length of the wire **(c) both the above mentioned**

(d) none of the above

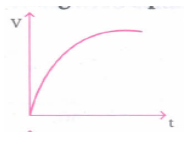
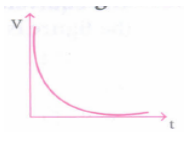
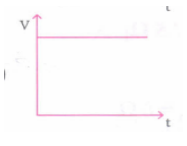
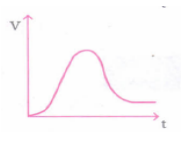
22) The conductivity is the reciprocal of _____.

(a) resistance **(b) specific resistance** (c) conductance (d) potential difference

23) Nichrome wire is used as the heating element because it has _____.

(a) low specific resistance (b) low melting point **(c) high specific resistance** (d) high specific resistance

24) An ideal cell is connected to a capacitor through a voltmeter. The reading V of the voltmeter is plotted against time. Which of the following best represents the resulting curve?

(a)  **(b)**  (c)  (d) 

25) By increasing the temperature, the specific resistance of a conductor and a semiconductor _____.

(a) increases for both **(b) increases, decreases respectively** (c) decreases for both

(d) decreases, increases respectively

26) The unit of electromotive force is_____

(a) joule (b) newton (c) coulomb **(d) volt**

27) A resistance of a metal wire of length AB is 2Ω. Another wire of length PQ of the same metal with twice the diameter of the wire AB is found to have the same resistance of 2Ω. What is the length of PQ?

(a) 4 AB (b) 2 AB (c) 1AB (d) 6 AB

28) These are behaving like thermistor _____.

(a) Insulators and conductors (b) Semiconductors and conductors (c) Conductors and alloys

(d) Insulators and semiconductors

29) The heat developed in half a minute resistor of resistance 5Ω is 15,000 joule. The current through the resistor is_____

(a) 5 A (b) 100 A (c) 40A **(d) 10A**

30) The potentiometer wire is made of_____

(a) Manganin (b) Copper (c) Aluminium (d) Nichrome

31) The tolerance of sliver ring in resistors is_____

(a) 5% **(b) 10%** (c) 20 % (d) 2 %

32) Resistance of a metal wire of length 10 cm is 2. If the wire is stretched uniformly to 50 cm the resistance is_____

(a) 25Ω (b) 10Ω (c) 5Ω **(d) 50Ω**

33) The specific resistance for the insulators is in the range of_____

(a) $10^{-6}10\text{-}^{8}\Omega m$ **(b) 10^{8}-$10^{14}\Omega m$** (c) 10^{-8}-$10^{-14}\Omega m$ (d) 10^{-8}-$10^{14}\Omega m$

34) The specific resistance of silver is_____

(a) $1.7 \times 10^{-8}\Omega m$ (b) $1.8 \times 10^{-7}\Omega m$ (c) $1.6 \times 10^{8}\Omega m$ **(d) $16 \times 10^{-9}\Omega m$**

35) The temperature at which normal conductor is converted into super conductor is_____

(a) neutral temperature (b) transition temperature (c) critical temperature **(d) both (b) and (c)**

36) The first theoretical explanation superconductivity was given by_____

(a) BSC theory **(b) BCS theory** (c) SBC theory (d) None

37) The temperature coefficient of resistance is positive_____.

(a) for metals (b) for insulators **(c) (a) and (b)** (d) all the above

38) In Kirchhoff's II law the current in clockwise direction is taken as_____

(a) positive (b) negative (c) neutral (d) no direction

39) The small error in Meter Bridge experiment due to end resistance will be eliminated by_____

(a) by interchanging the resistances (b) by interchanging the galvanometer and jockey

(c) by interchanging the battery and the jockey (d) without changing the resistances

40) Potentiometer is an instrument used for the measurement of_____

(a) current (b) resistance (c) capacitance (d) potential difference

41) The equivalent resistance in series combination is _____.

(a) Larger than the smallest resistance **(b) Larger than the largest resistance** (c) Smaller than the largest resistance

(d) Smaller than the smallest resistance

42) If the length of conductor is haled, then its conductivity would be _____.

(a) quadrupled (b) haled (c) double **(d) unchanged**

43) If the resistance of a coil is 3 ohm at 20 °C and α = 0.004/ °C then its resistance at 100 °C is ____.

(a) 1.98Ω **(b)** 3.96Ω (c) 7.92Ω (d) 39.6Ω

44) The unit of mobility of free electron is _____.

(a) $Vm^{-1} s^{-2}$ (b) $m^2 Vs^{-1}$ **(c)** $\mathbf{m^2 V^{-1}s^{-1}}$ (d) $m^2 V^{-1}s$

45) If the length of the conductor is doubted and its area, is reduced to half of its value, then its resistance would be _____.

(a) increased by two times (b) increased by four times **(c) decreased by four times** (d) decreased by two times

46) RMS voltage and frequency of v = 230 sin (314 t) A.C. source.

(a) 162.6V, 50Hz (b) 230V, 50Hz (c) 230V, 60Hz (d) 162.6V, 25Hz

47) Dimension of Resistance is _____.

(a) $\mathbf{ML^2 T^{-3} A^{-2}}$ (b) $ML^2 T^{-1} A^{-1}$ (c) $ML^2 T^{-2}A^{-3}$ (d) $ML^2 T^{-1}A^{-2}$

48) Kirchoff's I and II laws are based on conservation of _____.

(a) charge and energy (b) energy and charge (c) energy and voltage (d) energy and current

49) If a current of 7.5 A is maintained in a wire for 45 s then the charge flowing through the wire is :

(a) 6 C (b) 365.5 C (c) 3 C (d) 337.5 C

50) For the fuse wire, which of the following characteristic is immaterial?

(a) Radius (b) Resistivity **(c) Length** (d) None of these