PHYSICS

BOOKS - MCGROW HILL EDUCATION

PHYSICS (HINGLISH)

ELECTRIC CURRENT

Elementary Questions

1. When a body is negatively charged by friction, it means

A. the body has acquired excess of electrons

B. the body has acquired excess of protons

C. the body has lost some electrons

D. the body has lost some neutrons

Answer: A

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2. An electric charge on a body produces

A. a magnetic field only

B. an electric field only

C. both electric and magnetic field

D. neither electric nor magnetic field

Answer: B

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3. There is no flow of current between two charged bodies when connected because

A. they have the same quantity of charge

B. they have the same potential

C. they have the same capacity

D. they have the same ratio of potential per unit charge

Answer: B

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4. If a charged body attracts another body, the charge on the other body

A. must be negative

B. must be positive

C. must be zero

D. may be negative or positive or zero

Answer: D

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5. Electromotive force represents

A. force

B. energy

C. energy per unit charge

D. current

Answer: C

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6. The unit of e.m.f is

A. dyne

B. volt

C. ampere

D. ampere

Answer: B

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7. Number of kilowatt-hours = $\frac{\text{volt} \times \text{ampere} \times \_\_\_\_\_}{1000}$

A. time in seconds

B. time in minutes

C. time in hours

D. time in days

Answer: C

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8. The commonly used safety fuse wire is made of

A. copper

B. lead

C. nickel

D. an alloy of tin and lead

Answer: D

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9. Kilowatt hour is the unit of

A. power

B. energy

C. impulse

D. force

Answer: B

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10. 1kWH is equal to

A. $3.6 \times 10^6 MJ$

B. $3.6 \times 10^5 MJ$

C. $3.6 \times 10^2 MJ$

D. $3.6MJ$

Answer: D

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11. Electron volt is the unit of

A. energy

B. potential difference

C. charge

D. charge to mass

Answer: A

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12. One million electron volt $(1MeV)$ is equal to

A. $1.6 \times 10^{-19} J$

B. $1.6 \times 10^{-14} J$

C. $1.6 \times 10^{-13} J$

D. $1.6 \times 10^{13} J$

Answer: C

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13. If a person has five resistors each of value 1/5 ohm, then the maximum resistance he can obtain by connecting them is (A) 1 ohm (B) 5 ohm (C) 10 ohm (D) 25 ohm

A. 1Ω

B. 5Ω

C. $\frac{1}{2}\Omega$

D. $\frac{2}{5}\Omega$

Answer: A

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14. What is the minimum resistance the one can obtain by connecting all the five resistances each o f 1/5Ω

A. $\frac{1}{10}\Omega$

B. $\frac{1}{5}\Omega$

C. $\frac{1}{50}\Omega$

D. $\frac{1}{25}\Omega$

Answer: D

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15. Materials wich allow larger currents to fow through them are called

A. insulatous

B. conductors

C. semiconductors

D. alloys

Answer: B

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16. If I is a current through a wire and e is the change of electron, then the number of electrons in t seconds will be given by

A. $\frac{Ie}{t}$

B. Ite

C. e / It

D. It / e

Answer: D

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17. Conventionally, the direction of the current is taken as

A. the direction of flow of negative charge

B. the direction of flow of atoms

C. the direction of flow of molecules

D. the direction of flow of positive charge

Answer: D

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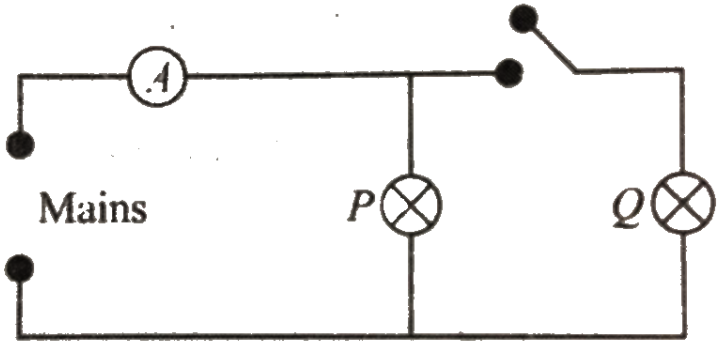
18. How will the reading in the ammeter A of Fig. 6.39 be affected if another identical bulb Q is connected in parallel to P as shows. The

voltage in the mains is maintained at a constant value.



A. the reading will be reduced to one-half.

B. the reading will not be affected.

C. the reading will be double the previous value.

D. the reading wil be increased four-fold.

Answer: C

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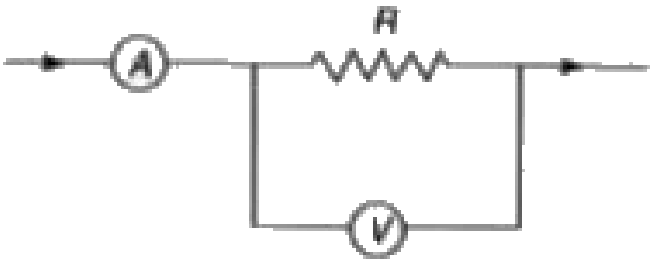
19. In the circuit shown below, the ammeter A reads 5 A and the voltmeter V reads 20 V The correct value of resistance R is



A. exactlt 4Ω.

B. slightly greater than 4Ω

C. slightly less than 4Ω

D. zero

Answer: B

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20. The force between two parallel wires carrying currents has been used to define

A. ampere

B. coulomb

C. volt

D. watt

Answer: A

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21. The unit of specific resistance is

A. ohm

B. ohm

C. ohm-metre

D. ohm per metre

Answer: C

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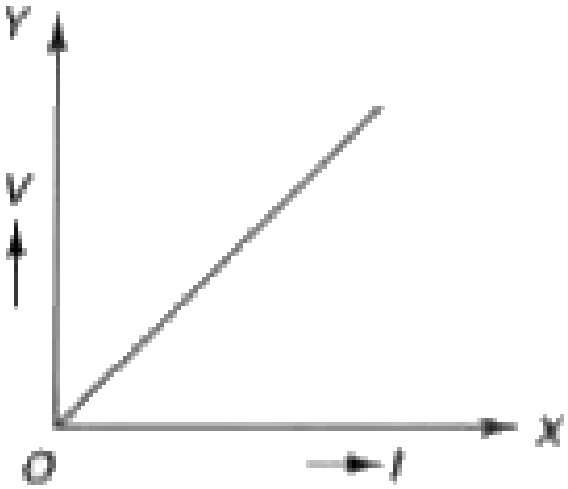
22. The slope of voltage (V) versus current (I) is called



A. resistance

B. conductance

C. resistivity

D. conductivity

Answer: A

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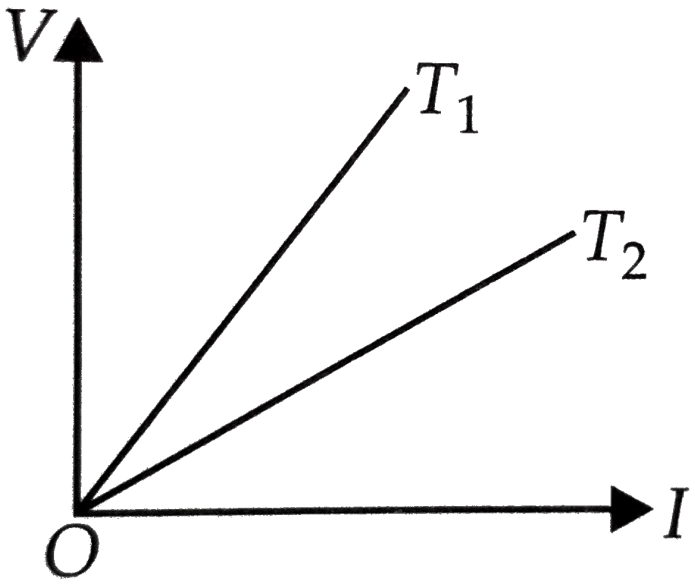
23. The voltage V and current I v graphs for a conductor at two different temperatures T_1 and T_2 are shown in the figure. The relation between T_1 and T_2 is



A. $T_1 = T_2$

B. $T_1 > T_2$

C. $T_1 < T_2$

D. nothing can be decided

Answer: B

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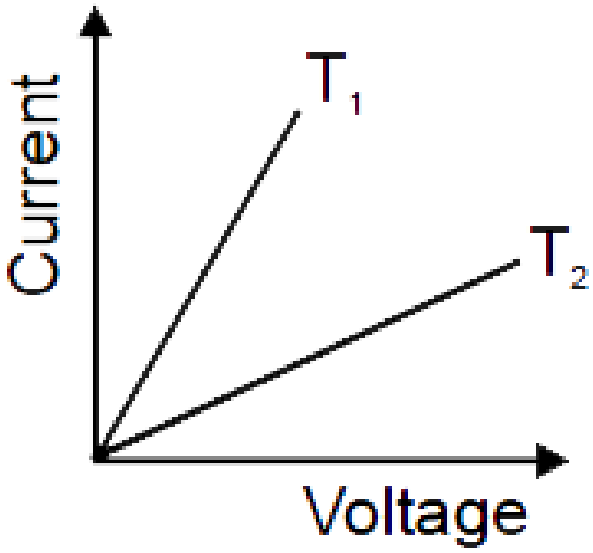
24. The current in a metllic conductor is plotted against voltage at two different

temperatures T_1 and T_2. Which is correct



A. $T_1 = T_2$

B. $T_1 > T_2$

C. $T_1 < T_2$

D. nothing can be decided

Answer: C

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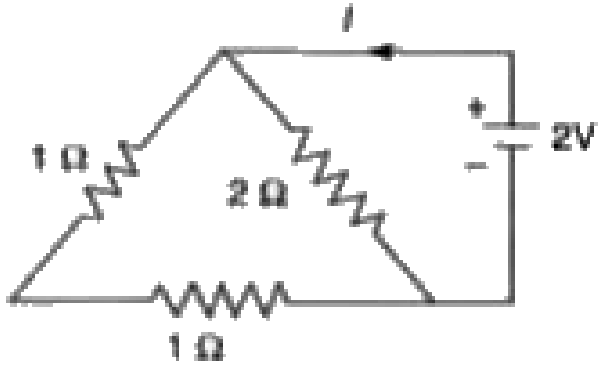
25. What is the current (I) in the circuit ?



A. `1/2 A

B. $2A$

C. $\frac{3}{2}A$

D. none of these

Answer: B

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26. The resistance of germanium _____ with rise in temperature.

A. increases

B. decreases

C. remains the same

D. first increases then decreases

Answer: B

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27. A suitble unit for expressing electric field strength is

A. V/C

B. C/m^2

C. Am

D. N/C

Answer: D

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28. The effective resistance of a circuit containing resistances in parallel is

A. equal to the sum of the individual resistances

B. smaller than any of the individual resistances

C. greater than any of the individual resistances

D. sometimes greater and sometimes smaller than the individual resistances

Answer: B

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29. Electric intensity is a ..... quantity and its units are .....

A. a scalar quantity

B. a vector quantity

C. neither scalar nor vector

D. sometimes scalar and sometimes vector

Answer: B

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30. Electric potential is a ..... Quantity and its units are ..... .

A. a scalar quantity

B. a vector quantity

C. neither scalar nor vector

D. sometimes scalar and sometimes vector

Answer: A

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31. Choose the only vector amongst the following:

A. electric potential

B. e.m.f.

C. electrical energy

D. electrostatic force

Answer: D

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32. One ohm is equal to

A. $10^6 M\omega$

B. $10^9 M\omega$

C. $10^{-6} M\Omega$

D. none of these

Answer: C

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33. When the temperature of a metallic conductor is increased, its resistance

A. increaaes

B. decreases

C. remains the same with rise

D. first increases then decreases

Answer: A

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34. The resistance of carbon _____ with rise in the temperature.

A. increases

B. decreases

C. remains the same

D. first increases then decreases

Answer: B

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35. The resistance of a semiconductor material (germainum or silicon) _____ with rise in temperature.

A. increase

B. decreases

C. remain the same

D. first increases then decreases

Answer: B

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36. Units of conductance are

A. ohm

B. henry

C. mho

D. moles/litre

Answer: C

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37. In Coulomb's law, the constant of proportionality K has the units

A. N

B. Nm^2

C. NC^2/m^2

D. Nm^2/C^2

Answer: D

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38. In coulomb's law,the magnitude of K in Nm^2/C^2 is

A. 9×10^5

B. 9×10^{11}

C. 9×10^3

D. none of these

Answer: B

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39. 1 volt equals

A. 1 J

B. 1 C/J

C. 1 J/C

D. none of these

Answer: C

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40. A graph is plotted between the potential difference (applied across the ends of a conductor) and the current (following through the conductor). The graph is a straight line

A. having intercepts on both axes

B. having an intercept on the X-axis

C. having in intercept on the Y-axis

D. none of these

Answer: D

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41. In order to measure current in a resistance present in a cirucit, the ammeter is connected

A. in series

B. in parallel

C. in series or parallel

D. nothing can be decided

Answer: A

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42. Good conductors have many loosely bound

A. atoms

B. protons

C. molecules

D. electrons

Answer: D

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43. In our house all electric devices operate on 220 V. It implies that

A. they are connected in parallel

B. they are connected in series

C. they all have currents of equal values

D. they all have the same resistance

Answer: A

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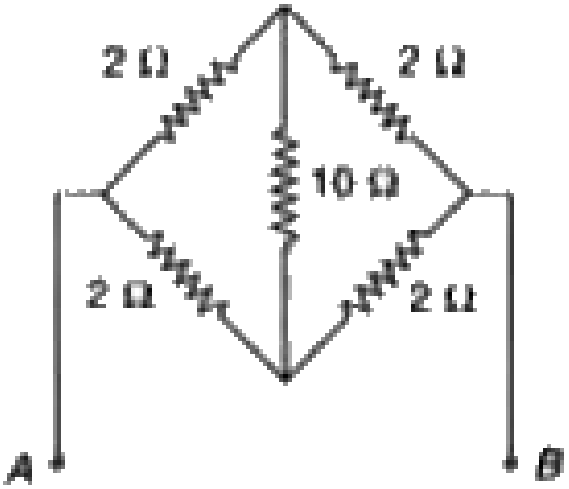
44. What is the total resistance across A and B in the circuit shown in



A. 1Ω

B. 2Ω

C. 1.5Ω

D. none of these

Answer: B

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45. What constitutes current in a metal wire ?

A. Electrons

B. Protons

C. Atoms

D. Molecules

Answer: A

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46. The fluxed resistance is called

A. reeostat

B. resistor

C. key

D. switch

Answer: B

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47. The variable resistance is called

A. resistor

B. reeostat

C. open switch

D. none of these

Answer: B

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48. A person connects four $\frac{1}{4}\Omega$ cells in series but one cell has its terminal reversed. The external resistance is 1Ω. If each cell has an emf of $1.5V$, the currenet folowing is

A. $\frac{4}{3}A$

B. $\frac{3}{4}A$

C. $1.5A$

D. zero

Answer: C

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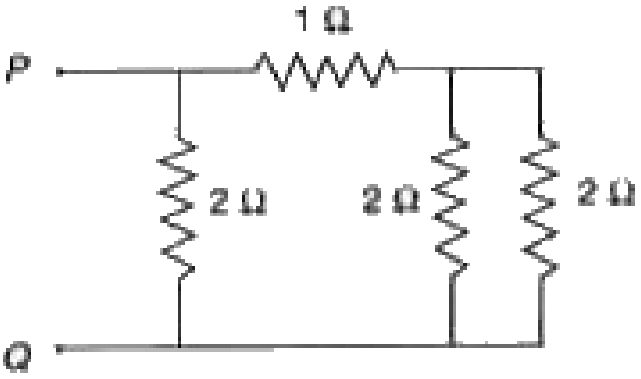
49. The equivalent resistance between P and Q will be



A. 7Ω

B. 2Ω

C. $\frac{5}{3}\Omega$

D. 1Ω

Answer: D

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50. If a wire of resistance 1Ω is stretched to double its length, then the resistnance will become

A. $\frac{1}{2}\Omega$

B. 2Ω

C. $\frac{1}{4}\Omega$

D. 4Ω

Answer: D

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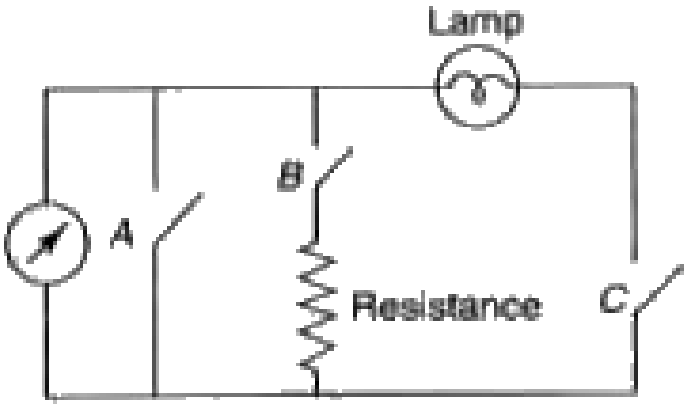
51. Which switchin the circuit when closed wil produce short-circuiting ?



A. A

B. B

C. C

D. None of the above

Answer: A

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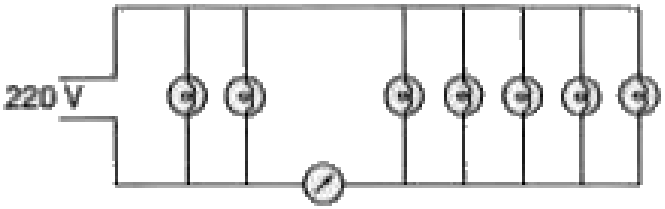
52. Seven identical lamps of resistance 220Ω each are connected to a 220 V line as shown in

Then the reading in the ammeter will be



A. $\frac{1}{10}A$

B. $\frac{2}{5}A$

C. $\frac{3}{10}A$

D. none of these

Answer: D

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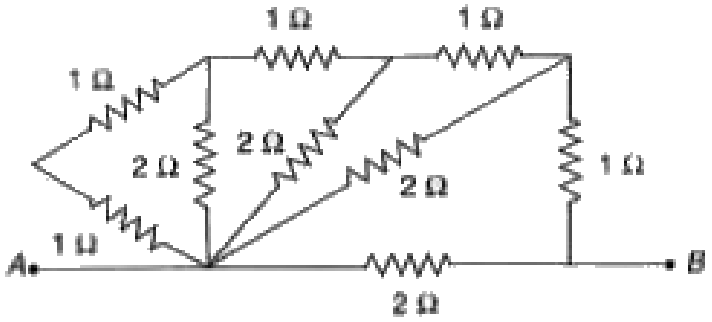
53. What is the resistance between A and B in the following circuit



A. 1Ω

B. 2Ω

C. $\frac{1}{2}\Omega$

D. $\frac{3}{2}\Omega$

Answer: A

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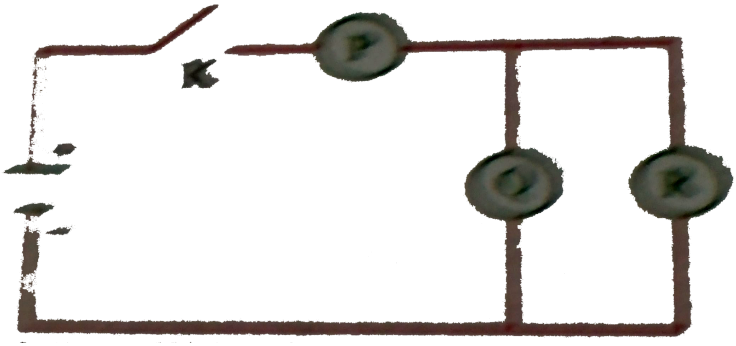
54. 

Three identical bulbs P, Q and R are connected to a battery as shown in the figure. When the circuit is closed.

A. R will be bright, but Q and P dim

B. P, Q and R, all will be equally bright

C. Q and R will immediately burn out

D. P will be bright, but Q and R dim

Answer: D

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55. An electric current is always accompained by a magnetic field', was discovered by

A. Oersted

B. Maxwell

C. Faraday

D. Ohm

Answer: A

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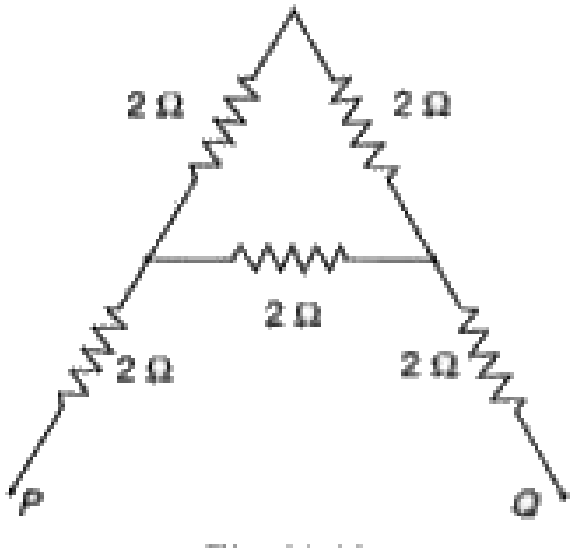
56. What is the resistance between P and Q ?



A. $\frac{3}{4}\Omega$

B. $\frac{4}{3}\Omega$

C. $\frac{16}{3}\Omega$

D. Infinity

Answer: C

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57. The conductance expressed in

A. ohm

B. $(ohm)^{-1}$

C. volt

D. $(ohm \cdot m)^{-1}$

Answer: b

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58. S.I. unit of specific resistance is

A. ohm m

B. $ohmm^{-1}$

C. $ohmm^{2}$

D. $(ohm)^{-1}$

Answer: A

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59. The reciprocal of resistity of a conductor is

A. conductance

B. capacitance

C. conductivity

D. none of these

Answer: C

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60. Good conductors have many loosely bound

A. atoms

B. molecules

C. protons

D. electrons

Answer: D

 Watch Video Solution

61. One ampere equals

A. $10^6 \mu A$

B. $10^{-6} \mu A$

C. $10^{-3} \mu A$

D. $10A$

Answer: A

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62. How many electrons consitute a currenet of one microampere ?

A. 6.25×10^6

B. 6.25×10^{12}

C. 6.25×10^9

D. 6.25×10^{15}

Answer: B

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63. A suitable unit for expressing the strength of electric field is

A. V/C

B. C/m

C. N/C

D. C/N

Answer: C

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64. 1 volt equals

A. 1 joule

B. 1 jule per coulomb

C. 1 coulomb per metre

D. 1 newton per coulomb

Answer: B

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65. $1Vm^{-1}$ equals

A. $1NC^{-1}$

B. $1NC^{-2}$

C. $1Jm^{-1}$

D. $1Jm^{-2}$

Answer: A

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66. The reciprocal of resistance is conductance. If the unit of resistance is ohm, the unit of conductance will be

A. ohm

B. volt

C. hmo

D. ohm metre^{-1}

Answer: C

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Higher Order Thinking Questions

1. With decreae in density of the material, the resistance of the conductor

A. increaes

B. decreases

C. remains the same

D. first increases then decreases

Answer: A

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2. With decrease in temperature, resistivity of a conductor

A. increases

B. decreases

C. remains the same

D. first increases then decreases

Answer: A

View Text Solution

3. If length of a metallic wire becomes n times, its resistance becomes

A. n^2 times

B. $\sqrt{n}$ times

C. $\left(\frac{1}{\sqrt{n}}\right)$ times

D. $\left(\frac{1}{n^2}\right)$ times

Answer: A

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4. If radius of a metallic wire becomes n times, its resistance becomes

A. n^2 times

B. $\left(\frac{1}{n^2}\right)$ times

C. n^4 times

D. $\left(\frac{1}{n^4}\right)$ times

Answer: D

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5. If area of cross-section of a metalic wire becomes n times, its resistance becomes

A. $\left(\frac{1}{n^2}\right)$ times

B. n^2 times

C. n^4 times

D. $\left(\frac{1}{n^4}\right)$ times

Answer: A

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6. What happens to its resistivity when some impurity is added in a conductor ?

A. Increaes

B. decreases

C. Remains the same

D. first increases then decreases

Answer: A

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7. If a wire of resistacne R is fold n times so that its length becomes $\left(\frac{1}{n}\right)^{th}$ of its initial length, then its new resistance becomes

A. nR

B. n^2R

C. $\frac{R}{n}$

D. $\frac{R}{n^2}$

Answer: D

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8. A conductor behaves as a superconductor

A. very high temperature

B. high temperature

C. room temperature

D. very low tempetature

Answer: D

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9. A rectangular conducting cube (resistivity ρ) has dimensions $l \times b \times h$. When current is passed through the length side, the resistance offered by the cube is

A. $\frac{\rho l}{bh}$

B. $\frac{\rho b}{hl}$

C. $\frac{\rho h}{lb}$

D. $\rho \frac{lb}{h^2}$

Answer: A

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10. If equivalent resistances of R_1 and R_2 in series and parallel be r_1 and r_2 respectively, then $\frac{R_1}{R_2}$ equals

A. $\frac{r_1}{r_2}$

B. $\frac{r_1 r_2}{r_1 + r_2}$

C. $\frac{r + \sqrt{r_1^2 - 4r_1 r_2}}{r_1 + \sqrt{r_1^2 + 4r_1 r_2}}$

D. $\frac{r + \sqrt{r_1^2 - 4r_1 r_2}}{r_1 - \sqrt{r_1^2 + 4r_1 r_2}}$

Answer: D

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11. If an equilateral triangle is made of a uniform wire is resistance R, the equivalent resistance between the ends of sides is

A. $\frac{2R}{3}$

B. $\frac{R}{3}$

C. $\frac{2R}{9}$

D. $\frac{9R}{2}$

Answer: C

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12. A resistor of 25 cm length and 4 ohm is stretched to a uniform wire of 50 cm length. The resistance now is

A. 1Ω

B. 12Ω

C. 16Ω

D. 20Ω

Answer: C

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13. A wire of resistance 1Ω is stretched so as to change its diameter by 0.25%. The percentage change in its resistance is

A. 1.0%

B. 2.0%

C. 4.0%

D. 8.0%

Answer: A

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14. The V-I graph for a good conductor makes angle 42° with V-axis. Here V denotes voltage and I denotes current. Then the resistance of the conductor will be

A. $\sin 42^\circ$

B. $\cos 42^\circ$

C. $\tan 42^\circ$

D. $\cot 42^\circ$

Answer: D

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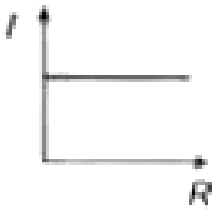
15. If a variable resistance is connected to a cell of constant e.m.f., then which one of the following grphs represnets the relationship between current I and resistanc R?

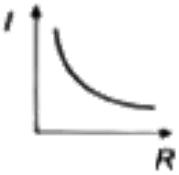
A. 

B.



C.

D.



Answer: D

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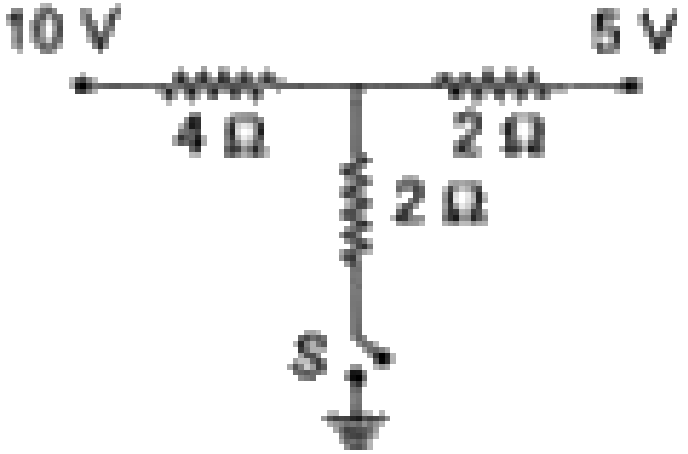
16. When the switch S is closed in the given circuit, the current passed through it is



A. $2A$

B. $1A$

C. $0.6A$

D. zero

Answer: A

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17. You are given three equal resistors. How many resistances can be obtained by joining them in series and parallel grouping ?

A. 2

B. 3

C. 4

D. 6

Answer: C

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18. $A8\Omega$ resistance wire is bent through 180° at its mid point and the two halves are twisted together. Then the resistance is

A. 16Ω

B. 4Ω

C. 2Ω

D. 1Ω

Answer: C

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19. The equivalent resistance of network of three 4Ω resistors can not be

A. 12Ω

B. 1.33Ω

C. 6Ω

D. 4Ω

Answer: D

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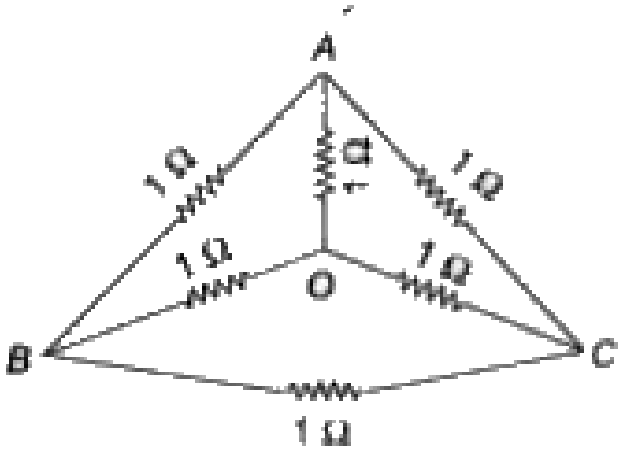
20. Six equal resistances, each 1Ω, are joined to form a network as showing figure Then the resistance between any two corners is



A. 0.5Ω

B. 2Ω

C. 1Ω

D. 1.5Ω

Answer: A

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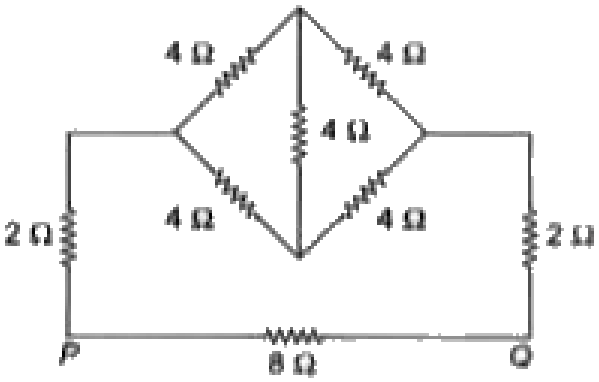
21. The resistance of the following circuit between P and Q is



A. 8Ω

B. 6Ω

C. 4Ω

D. 2Ω

Answer: C

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22. The resistivity of a wire is ρ, its volume is $3m^3$ and resistance is 3Ω, then its length will be

A. $\frac{3}{\rho}$

B. $\frac{3}{\sqrt{\rho}}$

C. $\frac{\sqrt{3}}{\rho}$

D. $\frac{\rho}{\sqrt{3}}$

Answer: B

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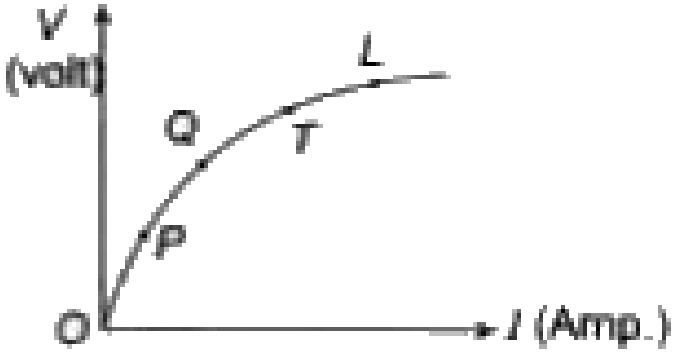
23. Variation of current passing through a conductor as the voltage applied across its ends is varied, as shown in figure. If the resistance is determined at the points P,Q,T and L. We find that



A. resistance at T and L are equal

B. resistance at Q is higher than at P

C. resistance at T is higher than at Q

D. None of the above

Answer: D

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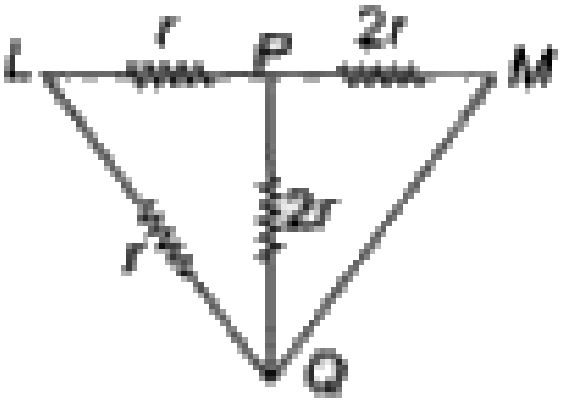
24. The effective resistance between points L and M is



A. $\frac{2R}{3}$

B. $\frac{R}{3}$

C. $\frac{3r}{5}$

D. $2r$

Answer: A

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25. E.m.f. of a cell is measured in

A. J

B. JC^{-1}

C. Nkg^{-1}

D. Wm^{-2}

Answer: B

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26. What is unit for resistivity of a metal ?

A. ohm

B. $ohmcm^{-1}$

C. $ohmcm^{-2}$

D. $ohmcm$

Answer: D

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27. A wire of resistance r is cut into m equal parts. These parts are then connected in parallel . The equivalent resistance of the combination will be

A. mr

B. r/m

C. m/r

D. r/m^2

Answer: d

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28. The resistance will be least in a wire with dimensions:

A. $\frac{L}{3}, 3A$

B. $\frac{L}{2}, 2A$

C. $3L, A$

D. L, A

Answer: A

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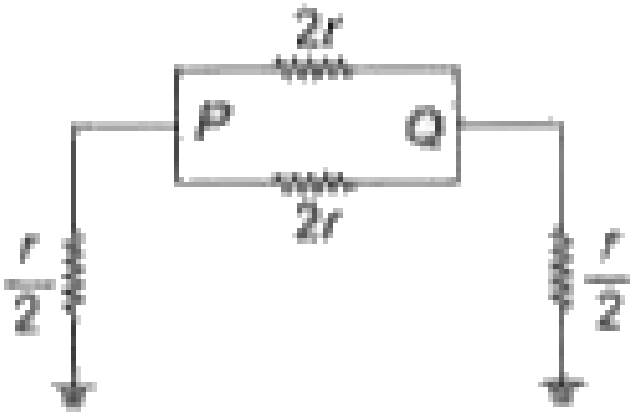
29. The effective resistance between P and Q in the given circuit is



A. $\frac{3r}{2}$

B. $3r$

C. $2r$

D. $\frac{r}{2}$

Answer: D

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