PHYSICS

BOOKS - NDA PREVIOUS YEARS

ELECTRICITY & MAGNETISM

Mcq

1. Why does a tower appear larger and larger to a person approaching it ?

1. The angle subtended by the tower at the eye increases.

2. The focal length of eye increases.

3. The size of the image on the retian of eye increases.

Select the correct answer using the code given below:

A. 1 only

B. 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: C

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2. Consider the following statements :

1. The magnetic pole in the northern hemisphere is the north magnetic pole.

2. At all points on a magnet, an iron bar gets attracted. Which one of the following statements given above is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: D

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3. The effective resistance of two wires is 2 x. The resistance of one wire is two times of the other wire and is three times the effective resistance. Which one of the following is correct in respet of value of x ?

A. x can take only one value.

B. x must only be greater than or equal to 1

C. x can take any positive real value

D. The information given above is inconsistent

Answer: C

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4. The function of a safety fuse of a given material is independent of which one of the following ?

A. Radius of the fuse wire

B. Resistivity of the fuse wire

C. Length of the fuse wire

D. Current flowing theough the fuse wire

Answer: C

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5. The mass of a copper wire of resistance R_1 and length l_1 is four times the mass of another copper wire of length l_2 and resistance R_2. If $R_1 = R_2$, which one of the following is correct ?

A. $l_1 = l_2$

B. $l_1 = 4l_2$

C. $l_1 = 2l_2$

D. $2l_1 = l_2$

Answer: A

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6. Why does one experience a strong shock when one accidentally touches a live wire of, say, 220 V ?

A. The resistance of human body is very low

B. The resistance of human body is very high

C. The human body is sensitive to even feeble currents

D. The human body is sensitive to large currents only

Answer: B

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7. Which one of the following statements is correct ? The space surrounding a charge in uniform motion has

A. only an electric field

B. only a magnetic field

C. both electric and magnetic fields

D. neither an electric field nor a magnetic field

Answer: C

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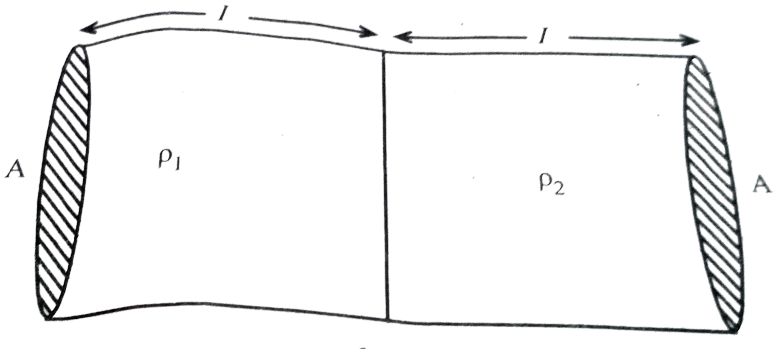
8.



Two rods having equal lengths and equal cross-sections but different specific resistances ρ_1 and ρ_2 are joined at one end

as shown in the figure given above. What is the effective specific resistance of the combination ?

A. $\frac{\rho_1\rho_2}{\rho_1+\rho_2}$

B. $\frac{\rho_1+\rho_2}{2}$

C. $\rho_1+\rho_2$

D. $\frac{\rho_1\rho_2}{2(\rho_1+\rho_2)}$

Answer: C

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9. What is the number netural points for a bar magnet with its north pole pointing geographical north ?

A. Zero

B. One

C. Two

D. Infinite

Answer: C

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10. Two charged spheres of radii 10 cm and 15 cm are connected by a thin wire. Current will flow through then if they have the same

1. charge on each

2. energy

3. potential

Which of the statements given above is/are correct ?

A. Only 1

B. Only 2

C. Only 3

D. Both 1 and 2

Answer: D

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11. A current is passed through a vertical spring from whose lower end a weight is hanging. What will happen to the weight ?

A. The weight shall go up

B. The weight shall go down

C. The position of the weight will remain the same

D. The weight shall oscillate

Answer: D

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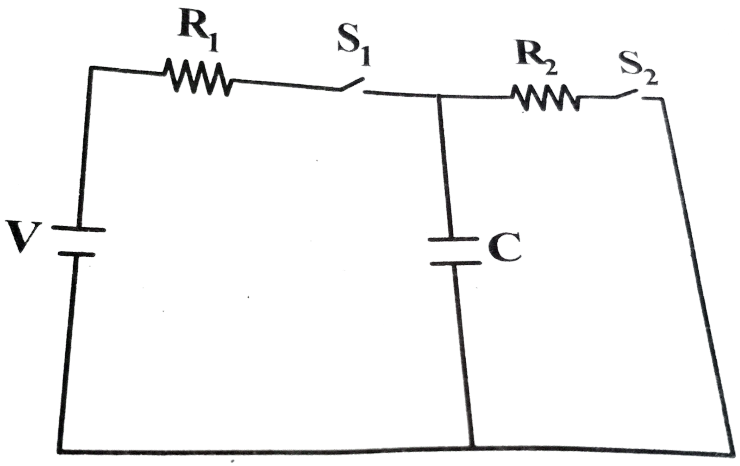
12.



In the circuit shown above, when do the condenser (C) get fully charged to volts ?

A. Both S_1 and S_2 are closed

B. Both S_1 and S_2 are opened

C. S_1 is closed but S_2 is opened

D. S_1 is opened but S_2 is closed

Answer: C

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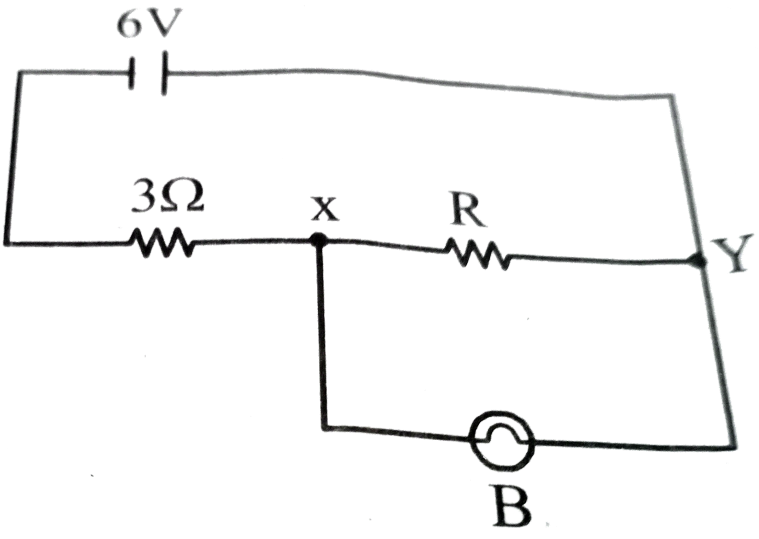

13.

B is a 1.5V, 0.30A, 5.0Ω torch buld working in the circuit as

shown above. What is the combined resistance of R and B between the points X and Y ?

A. 3.0Ω

B. 0.45Ω

C. 1.0Ω

D. 5.0Ω

Answer: C

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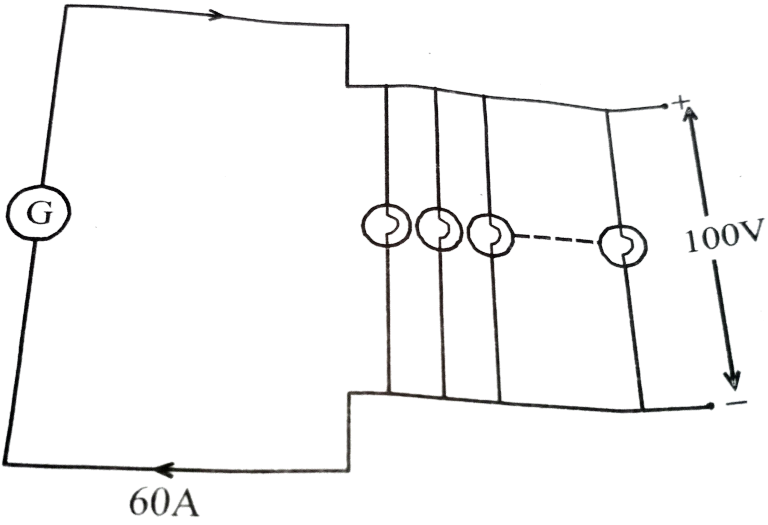

14.

A generator G having a terminal voltage of 100 V is delivering a total current of 60 A to a load comprising N number of 50 W, 100 V lamps connected in parallel as shown in the circuit given above. What is the value of N ?

A. 30

B. 40

C. 60

D. 120

Answer: D

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15. Which of the following does not affect the motion of a moving electron ?

A. Electric field applied in the direction of motion

B. Magnetic field applied in the direction of motion

C. Electric field applied perpendicular to the direction of motion

D. Magnetic field applied perpendicular to the direction of motion

Answer: D

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16. A hollow sphere of radius 50 cm is charged, such that the potential on its surface is 500 V. What is the potential at the centre of sphere ?

A. Zero

B. 10 V

C. 200 V

D. 500 V

Answer: D

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17. When an electric buld breaks, what is the reason for a mild bang ?

A. A chemical reaction between the enclosed gases

B. Compressed gases rush out suddenly

C. The air rushes in to fill the evacuated space

D. None of the above

Answer: C

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18. Which one of the following is the correct statement ? For an open circuit, the value of load,

A. would be infinite

B. would be zero

C. depends on the voltage of the source

D. depends on other components of circuit

Answer: A

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19. Which one of the following is the correct statement ? A fairly uniform magnetic field is produced

A. inside a horse-shoe magnet

B. inside a cylindrical conductor

C. inside a solenoid

D. between two parallel conductor

Answer: C

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20. Which one of the following is the correct statement ? If prieces of copper and germanjum are cooled from room temperature to liquid nitrogen temperature, then the

A. resistance of each increases

B. resistance of each decreases

C. resistance of copper decreases while that of germanium increases

D. resistance of copper increases while that of germanium decreases

Answer: C

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21. A wire of resistance 16Ω is bent in the form of a circle. What is the effective resistance between diametrically opposite points?

A. 1Ω

B. 2Ω

C. 4Ω

D. 8Ω

Answer: C

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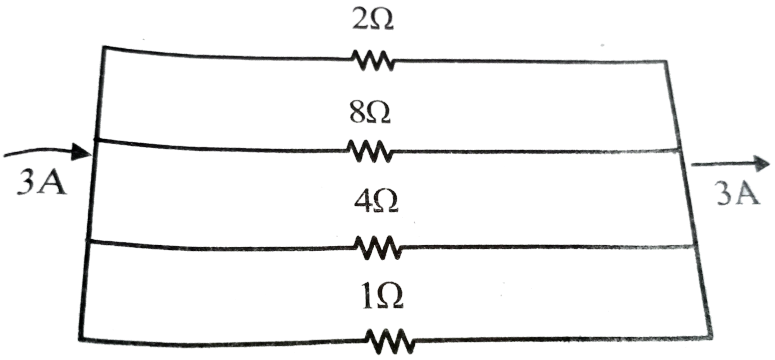

22.

If an input current 3 A flows through the circuit shown above. What is the value of the current flowing through the 4Ω resistor ?

A. $1.6A$

B. $0.8A$

C. $0.75A$

D. $0.4A$

Answer: D

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23. Which one of the following is correct?

Lightning is formed, when

A. similar charges of electricity rush towards each othere and then get repelled

B. clouds strike against impurities in air and the friction burns up these impurities

C. strong opposite charges in different clouds break down the resistance offered by intervening air

D. water vapour produces electricity in the clouds

Answer: C

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24. Which one of the following is correct?

Electrical lines of forces

A. exist everywhere

B. exist in the immediate vicinity of positive charge

C. exist in the immediate vicinity of negative charge

D. are imaginary

Answer: D

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25. Two similar poles repel each other with a force of 0.005 N when placed 16 cm apart. If they are placed 8 cm apart, what will be the repulsing force ?

A. 0.001 N

B. 0.002 N

C. 0.01 N

D. 0.02 N

Answer: D

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26. Which one of the following is correct?

A negatively charged glass rod has always

A. less electrons than protrons

B. less electrons than neutrons

C. less protons than electrons

D. less neutrons than protons

Answer: C

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27. The dimensions of a rectangular block of carbon are $2cm \times 2cm \times 10cm$ cm. If the resistivity of the carbon is $2 \times 10^{-5}\Omega m$, what is the resistance measured between the two square surfaces?

A. $5 \times 10^{-3}\Omega$

B. $2 \times 10^{-3}\Omega$

C. $5 \times 10^{-2}\Omega$

D. $2 \times 10^{-2}\Omega$

Answer: A

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28. Which one of the following is correct?

One unit of electric power is consumed when

A. 1 A of current flows for 1 sec at 220 V

B. 1 A of current flows for 1 sec at 10 V

C. 100 A of current flows for 1 sec at 10 V

D. 10 A of current flows for 1 hour at 100 V

Answer: D

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29. In our houses we get 200 VAC What does the value 220 V represent ?

A. Constant voltage

B. Effective voltage

C. A verage voltage

D. Peak voltage

Answer: B

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30. If the current is flowing through a 10 ohm resistor, then in which one of the following cases maximum heat will be generated?

A. 5 A in 2 min

B. 4 A in 3 min

C. 3 A in 6 min

D. 2 A in 12 min

Answer: C

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31. The rating of an electric lamp is 110V. To use it one 220V, one will have to use which one of the following?

A. Transistor

B. Resistor

C. Transformer

D. Generator

Answer: B

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32. A bar magnet is placed inside a uniform magnetic field, What does in experience?

A. A force

B. A torque

C. Both a force and a torque

D. Neither a force nor a torque

Answer: B

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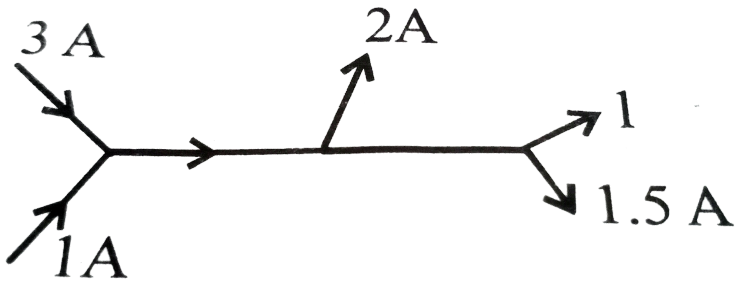
33.



The figure shows current in a part of electrical network. What is the value of current I?

A. $0.2A$

B. $0.1A$

C. $0.3A$

D. $0.5A$

Answer: D

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34. A wire has a resistance of 32Ω. It is melted and drawn into a wire of half of its original length. What is the resistance of the new wire?

A. 32Ω

B. 16Ω

C. 8Ω

D. 4Ω

Answer: C

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35. In which one of the following cases Ohm's law is not vaild?

A. Wire bound resistor

B. Potentiometer

C. Junction diode

D. Electric bulb

Answer: C

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36. A proton and an electron having equal velocity are allowed to pass through a uniform magnetic field. Which one of the following statements is correct in this connection?

A. The proton and the electron experience equal and opposite force

B. The proton experiences greater force then does the electron

C. The electron experiences more force than does the proton

D. No moving charged particle experiences a force in a magnetic field

Answer: A

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37. Consider the following : Heat produced in a conductor carrying current is independent of

1. Current passing through it.

2. Thermal conductivity.

3. Specific resistance.

Which of the statement given above is/are correct?

A. 1 and 3

B. 2 only

C. 1 and 2

D. 2 and 3

Answer: D

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38. DC current can be controlled by which one of the following components?

A. Impedance

B. Resistance

C. Capacitance

D. Inductance

Answer: B

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39. The wavelength of X-rays is of the order of

A. 1 mm

B. 1 cm

C. 1 micron

D. 1 angstrom

Answer: D

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40. The electric charge is stored in a device called

A. Inductor

B. Capacitor

C. Resister

D. Transformer

Answer: B

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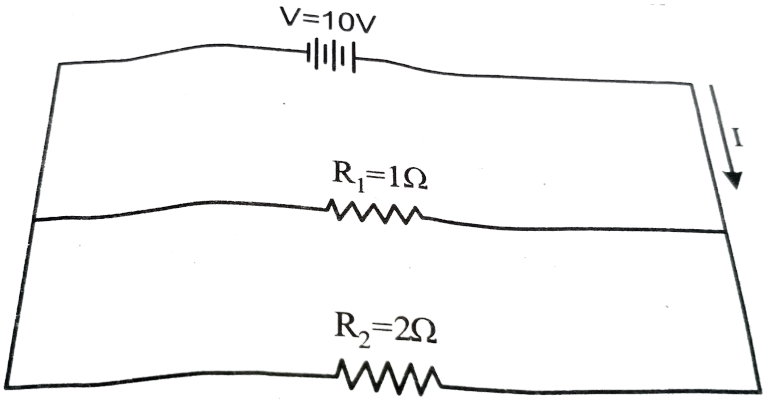
41.



Which one of the following is the value of current I in the circuit shown above?

A. $5A$

B. $10A$

C. $15A$

D. $20A$

Answer: C

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42. The force experienced by a unit positive test charge placed at a point is called

A. magnetic field at that point

B. gravitational field at that point

C. electrical field at that point

D. nuclear field at that point

Answer: C

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43. Non-conductors, whose polarization is caused by an electric field, are known as

A. Semi-conductors

B. Super-conductors

C. Dielectrics

D. Resistive conductors

Answer: C

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44. The resistance of a Wire that must be placed parallel with a 120 resistance to obtain a combined resistance of 4Ω is

A. 2Ω

B. 4Ω

C. 6Ω

D. 8Ω

Answer: C

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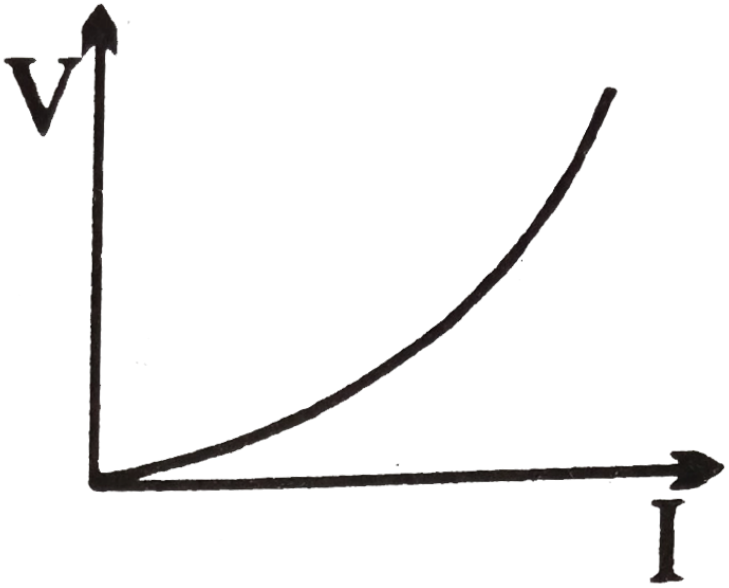
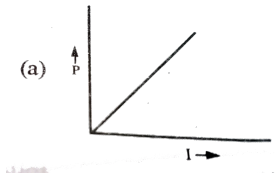
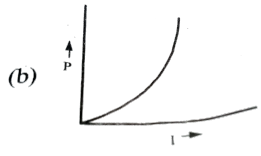
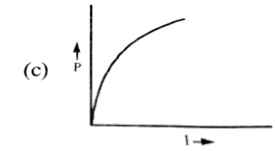
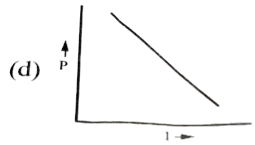
45. The variation of current (I) and voltage (V) is as shown in figure A. The variation of power P with current I is best shown by which of the following graph



A. 

B. 

C. 

D. 

Answer: B

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46. Net charge in a current-carrying conductor is

A. always positive

B. always negative

C. zero

D. either positive or negative

Answer: C

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47. Which one of the following is the resistance that must be placed parallel with 12Ω resistance t obtain a cmbined resistance of 4Ω ?

A. 2Ω

B. 4Ω

C. 6Ω

D. 8Ω

Answer: C

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48. An electric iron of resistance 20Ω takes a current of $5A$. Calculate the heat developed in $30s$.

A. $5kJ$

B. $10kJ$

C. $15kJ$

D. $20kJ$

Answer: C

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49. A house, served by a 220 V supply line, is protected by a 9A fuse. What is the maximum number of 60 watt bulbs that can be turned on in parallel?

A. 11

B. 22

C. 33

D. 44

Answer: C

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50. The effective resistance of three equal resistances, each of resistance r, connected in parallel, is

A. $3/r$

B. $r/3$

C. 3r

D. r^3

Answer: B

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51. The magnetic lines of force due to the bar magnet

A. intersect inside the body of the magnet

B. intersect at neutral points only

C. intersect only at north and south poles

D. cannot intersect at all

Answer: D

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52. The specific resistance of a conducting wire depends upon

A. length of the wire, area of cross-section of the wire and material of the wire

B. length of the wire and area of cross-section of the wire but not on thematerial of the wire

C. material of the wire only but neither on the length of the wire nor on the area of cross-section of the wire

D. length of the wire only but neither on the area of cross-section of the wire nor on the material of the wire

Answer: C

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53. Which one of the statement given below is not correct?

A. A vertical plane passing through the axis of a freely suspended magnet is called the magnetic meridian

B. A vertical plane passing through the axis of rotation of the Earth is called the geographical meridian

C. The degree to which the magnetic field can penetrate a medium is known as the relative permeability of the medium

D. The relative permeability is not a dimensionless quantity

Answer: D

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54. How many sixty watt (60 W) bulbs may be safely used in a 240-V supply with 4-ampere fuse?

A. 4

B. 8

C. 12

D. 16

Answer: D

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55. Magnetism of a bar magnet can be destroyed if it is

(I) kept in the magnetic meridian.

(II) placed in a direction opposite to that of the Earth's horizontal intensity.

(III) heated to a temperature known as Curie temperature. Select the correct answer using the code given below.

A. I and III only

B. II only

C. II and III only

D. I, II and III

Answer: C

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56. Capacity of a parallel plate condenser can be doubled by

(I) doubling the areas of the plates.

(II) doubling the distance of separation between the plates.

(III) reducing the distance of separation between the plates to half the original separation.

(IV) doubling both the areas of the plates and the distance of separation between the plates.

Select the correct answer using the code given below

A. I and IV

B. I and III

C. III only

D. II and III

Answer: D

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57. If two conducting spheres are separately charged and then brought in contact

A. the total energy of the two spheres is conserved

B. the total charge on the spheres is conserved

C. both the total energy and charge are conserved

D. the final potential is always the mean of the original potential of the two spheres

Answer: B

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58. Two pieces of metallic wire having equal lengths and equal volume placed in air have different resistances. The two wires must

A. have different cross-sections

B. have different temperatures

C. be of different materials

D. be of same density

Answer: C

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59. If a heater coil is cut into two equal parts and only one part is used in the heater, the heat generated will be

A. doubled

B. four times

C. one-fourth

D. halved

Answer: A

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60. The direction of magnetic field at a point due to an infinitely long wire carrying current is

A. parallel to the current

B. antiparallel to the current

C. along the perpendicular drawn from a point on the wire

D. perpendicular to the plane containing the conductor and the point

Answer: D

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61. A hollow metal ball carrying an electric charge produces no electric field at points

A. outside the sphere

B. on its surface

C. inside the sphere

D. only at the centre

Answer: C

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62. The material used for electric fuse is an alloy of tin and lead. This alloy should have

A. high specific resistance and low melting point

B. low specific resistance and high melting point

C. low specific resistance and low melting point

D. high specific resistance and high melting point

Answer: A

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63. The lines of force of uniform magnetic field

A. must be convergent

B. must be divergent

C. must be parallel to each other

D. intersect

Answer: C

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64. If the electrical resistance of a typical substance suddenly drops to zero then the subtance is called

A. superconductor

B. semiconductor

C. conductor

D. insulator

Answer: A

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65. Magnets attract magnetic substances are iron, nickel, cobalt, etc. They can also repel

A. paramagnetic substances

B. ferromagnetic substances

C. diamagnetic substances

D. non-magnetic substances

Answer: C

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66. Two copper wires A and B of length l and 2l respectively, have the same area of cross-section. The ratio of the resistivity of wire A to the resistivity of wire B is

A. 4

B. 2

C. 1

D. $1/2$

Answer: B

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67. A neural (uncharged) metal ball is suspended using a non-magnetic string. A positively charged insulating rod is placed near the ball which is observed to be attracted to the rod. This is because

A. the ball becomes positively charged by induction

B. the ball becomes negatively charged by induction

C. there is a rearrangement of the electrons in the ball

D. the number of electrons in the ball is more than the number of electrons on the rod

Answer: B

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68. Potential at a point due to a point charge is V. The charge is doubled and also the distance of the point from the charge is doubled. The new potential is

A. $V/2$

B. 4V

C. V

D. 2V

Answer: C

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69. Kilowatt-hour is a unit of

A. potential difference

B. electric power

C. electric energy

D. electric potential

Answer: C

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70. Three resistance coils of 1Ω, 2Ω are connected in series. If the combination is connected to a battery of $9V$, what is the potential drop across the resistance coil of 3Ω?

A. 2.0 volt

B. 3.0 volt

C. 4.5 volt

D. 6.0 volt

Answer: C

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71. An electric lamp of 100 watt is used for hours per day. The 'units' of energy consumed in one day by the lamp is

A. 1 unit

B. 0.1 unit

C. 10 units

D. 100 units

Answer: A

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72. Two similarly charged bodies are kept 5 cm apart in air. If the secnd body is shifted away from the first by another 5 cm, their force of repulsion will be

A. doubled

B. halved

C. quadrupled

D. reduced to one-fourth

Answer: D

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73. The main power supply in India is at 220 V, whereas that in the US is at 110 V. Which one among the following statements in this regard is correct?

A. 110 V is safer but more expensive to maintain

B. 110 V is safer and cheaper to maintain

C. 110 V leads to lower power loss

D. 110 V works better at higher latitudes

Answer: A

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74. The resistance of a wire is 10Ω. If it is stretched ten tmes, the resistance will be

A. 1Ω

B. 10Ω

C. 100Ω

D. 1000Ω

Answer: D

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75. The torque on a rectangular coil placed in a uniform magnetic filed is large when the

A. number of turns is large

B. number of turns is less

C. plane of the coil is perpendicular to the magnetic field

D. area of the coil is small

Answer: A

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76. Two metalic wires A and B are of same material and have equal length. If the cross-sectional area of B is double that of A, then which one among the following is the electrical resistance of B?

A. Twice that of A

B. 4 times that of A

C. $\frac{1}{4}$ that of A

D. $\frac{1}{2}$ that of A

Answer: D

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77. For which among the following house appliances, magnet is an essential part?

A. Calling bell

B. Fan

C. Washing machine

D. All of the above

Answer: D

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78. Which one among the following is the correct order of power consumption for light of equal intensity ?

A. CFL tube $<$ Fluorescent tube $<$ Incandescent bulb $<$ Light emitting diode

B. Light emitting diode $<$ CFL tube $<$ Fluorescent tube $<$ Incandescent bulb

C. CFL tube $<$ Fluorescent tube $<$ Light emitting diode $<$ Incandescent bullb

D. Incandescent bulb $<$ Light emitting diode $<$ Fluorescent tube $<$ CFL tube

Answer: B

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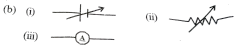
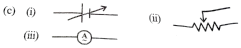
79. Which one among the following is the true representation of (i) variable DC potential (ii) rhential and (iii) AC ammeter respectively ?

A. 

B. 

C. 

D. 

Answer: C

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80. In India, distribution of electricity for domestic purpose is done in the form of

A. $220V, 50Hz$

B. $110V, 60Hz$

C. $220V, 60Hz$

D. $110V, 50Hz$

Answer: A

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81. The earth's magnetic field is approximately

A. 1 Tesla

B. 2 Gauss

C. 10^4 Tesla

D. 1 Gauss

Answer: D

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82. Match List I with II and select the correct answer using the code given below the Lists :

	List I (Magnet)		List II (Property)
$A.$	Artifical magnet	1.	Long lived
$B.$	Permanent magnet	2.	Last for infinitely long period
$C.$	Temporary magnet	3.	Short lived
$D.$	Earth as a magnet	4.	Induced magnet

A. $\begin{matrix} A & B & C & D \\ 3 & 1 & 4 & 2 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 3 & 4 & 1 & 2 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 2 & 1 & 4 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 2 & 4 & 1 & 3 \end{matrix}$

Answer: A

Watch Video Solution

83. The polarity of an unmarked horse shoe magnet can be determined by using

A. a charged glass rod

B. a magnetic compass

C. an electroscope

D. antother unmarked bar magnet

Answer: B

Watch Video Solution

84. Consider the following statements :

1. If a piece of bar magnet is broken into two equally long pieces, the pieces will not lose the magnetic properties.

2. Magnetic properties of a substance lie in the atomic level.

Which of the statements given above is/are correct ?

A. 1 only

B. 2 only

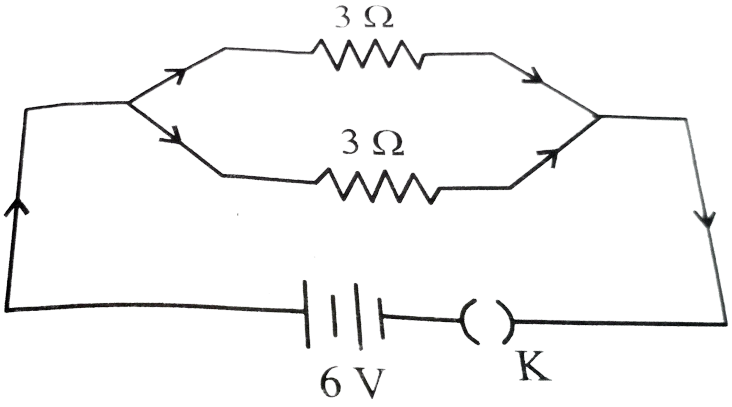
C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

Watch Video Solution

85. Consider the following circuit :



The current flowing the rhrough each of the resistors connected in the above circuit is

A. 2A

B. 1A

C. 9A

D. 4A

Answer: A

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Watch Video Solution

86. When an electrical safety fuse is reted (marked) as 16 A, it means it

A. will not work if current is less than 16 A

B. has a resistance of 16Ω

C. will work if the temperature is more than $16^{\circ}C$

D. will be blown (break) if current exceeds 16 A

Answer: D

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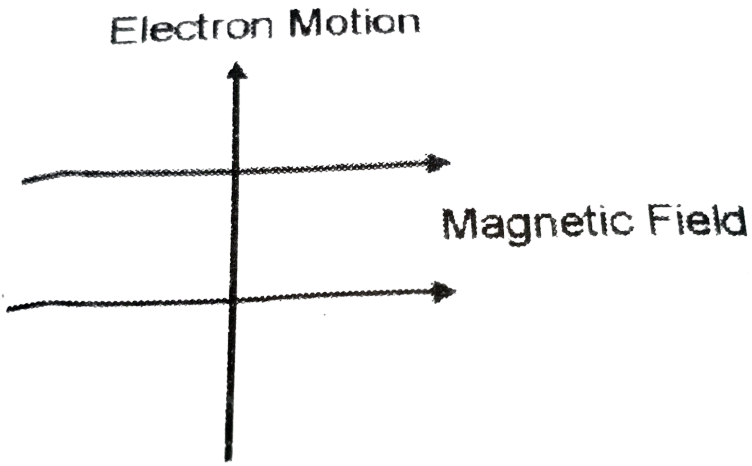

87.

The motion of an electron in presence of a magnetic field is depicted in the figure. Force acting on the electron will be directed

A. into the page

B. out of the page

C. opposite to the motion of the electron

D. along the motion of the electron

Answer: B

Watch Video Solution

88. Imagine a current carrying wire with the direction of current downward or into the page. The direction of magnetic field lines is

A. clockwise

B. anti-clockwise

C. into-the page

D. out of the page

Answer: B

Watch Video Solution

89. OHM'S LAW

A. a resistance

B. current only

C. voltage only

D. both current and voltage

Answer: A

Watch Video Solution

90. A current-carrying wire is known to produce magnetic lines of force around the conducting straight wire, the direction of the lines of force may be described by :

A. left-hand thumb rule for up-current and right-hand thumb rule for down current

B. right-hand thumb rule for up-current and left-hand thumb rule for down current

C. right-hand thumb rule for both up and down currents

D. left-hand thumb rule for both up and down currents

Answer: C

Watch Video Solution

91. Metal used to make wires for safety fuses must have

A. very low resistivity and high melting point

B. high resistivity and low melting point

C. low resistivity and low melting point

D. high resistivity and high melting point

Answer: B

Watch Video Solution

92. A positively charged particle projected towards west is deflected towards north by a magnetic field. The direction of the magnetic field is

A. towards south

B. towards east

C. in downward direction

D. in upward direction

Answer: D

Watch Video Solution

93. A current I flows through a potential difference V in an electrical circuit containing a resistance R. The product of V and I, i.e., VI may be understood as

A. resistance R

B. heat generated by the circuit

C. thermal power radiated by the circuit

D. rate of change of resistance

Answer: C

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94. This question consist of two statements, one labelled as the Assertion (A) and the other as 'Reason (R), You are to examine these two statements carefully and select the answers to these two statements carefully and select the answers to these items using the codes given below:

Assertion(A) : If the filament of a light bulb is not uniform horizontal its life is shortened.

Reason(R) : Resistance of glowing light bulb is less than that of bulb at room temperature.

A. Both A and R are individually true and R is the correct explanation of A

B. Both A and R are individually true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

Watch Video Solution

95. A current of 0.5A is drawn by a filament of an electric bulb for 20 minutes. The amount of electric charge that flows through the circuit is

A. 1 C

B. 10 C

C. 600 C

D. 300 C

Answer: C

Watch Video Solution

96. Which of the following properties of a proton can change while it moves freely in a mangetic field? (There may be more than one correct answer).

A. Speed

B. Charge

C. Mass

D. Velocity

Answer: D

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97. Ohm's law can also be taken as a statement for

A. conservation of energy.

B. conservation of electric charge.

C. conservation of angular momentum.

D. non-conservation of momentum of the flowing charges.

Answer: A

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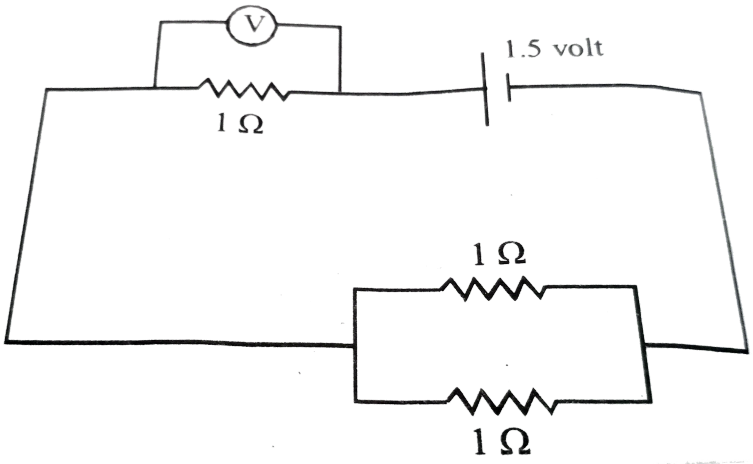

98.

What should be the reading of the voltmeter in the circuit given above ?

(All the resistance are equal to 1Ω and the battery is of 1.5 volt)

A. 1.5 volt

B. 0.66 volt

C. 1 volt

D. 2 volt

Answer: C

Watch Video Solution

99. An electric heater is rated 1500 watt. If electric power costs Rs. 2 per kilp-watt-hour, then the cost of power of 10 hours running of the heater is

A. Rs. 30

B. Rs. 15

C. Rs. 150

D. Rs. 25

Answer: A

Watch Video Solution

100. When long dry hair is brushed the strands often move away from each other because while brushing

A. air is being blown through the strands.

B. static electric charges are being induced on the hair.

C. mechanical energy is being transferred into heat energy.

D. the gravitational attraction among the strands becomes smaller.

Answer: B

Watch Video Solution

101. Two conducting wires A and B are made of same material. If the length of B is twice that of A and the radius of circular

cross-section of A is twice that of B, then resistances R_A and R_B are in the ratio

A. $2:1$

B. $1:2$

C. $1:8$

D. $1:4$

Answer: C

Watch Video Solution

102. During short-circuiting, the current flowing in the electrical circuit

A. reduces substantially

B. does not change

C. increases instantaneously

D. varies continuously

Answer: C

Watch Video Solution

103. Van de Graaff generator is used for

A. accelerating charged particles

B. generating large currents

C. generating electric field

D. generating high-frequency voltage

Answer: D

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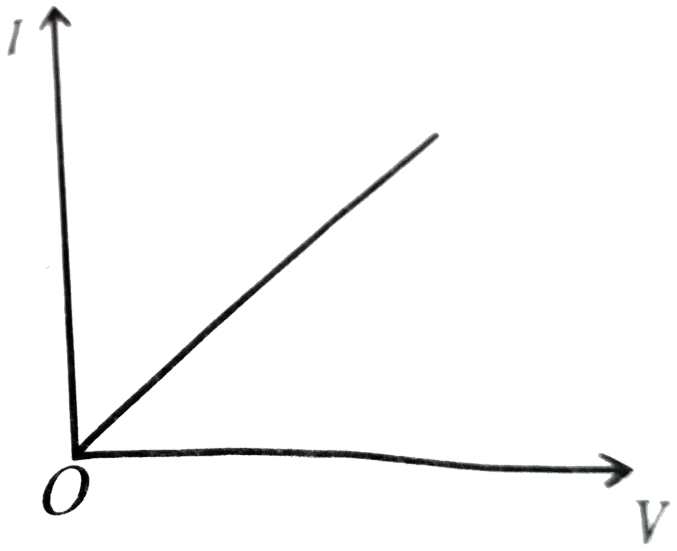


104.

The current (I)-voltage (V) plot of a certain electronic device is given above. The device is

A. a semiconductor

B. a conductor which obeys Ohm's law

C. a superconductor

D. an insulator

Answer: B

Watch Video Solution

105. A fuse is used in a electric circuit to

A. break the circuit when excessive current flows through the circuit

B. break the circuit when power gets off

C. indicate if the current is flowing uninterrupted

D. complete the circuit for flow of current

Answer: A

Watch Video Solution

106. The phenomenon of electromagnetic induction implies a production of induced

A. resistance in a coil when the matgnetic field changes with time

B. current in a coil when an electric field changes with time

C. current in a coil when a magnetic flux changes with time

D. voltage in a coil when an electric field changes with time

Answer: C

Watch Video Solution

107. Statement I: It is not necessary that every bar magnet has one North Pole and one South Pole.

Statement II: Magnetic poles occure in pair.

A. Both the statement are individually true and Statement II is the correct explanation of Statement I.

B. Both the statements are individually true but Statement II is not the correct explanation of Statement I.

C. Statement I is true but Statement II is false

D. Statement I is false but Statement II is true.

Answer: D

 Watch Video Solution

108. Which of the following are the correct parameters for the common domestic power supply in India?

A. 220 V, 110 Hz

B. 220 V, 50 Hz

C. 110 V, 220 Hz

D. 110 V, 50 Hz

Answer: B

Watch Video Solution

109. Which one of the following circuit elements is an active component ?

A. Resistor

B. Transistor

C. Inductor

D. Capacitor

Answer: A

Watch Video Solution

110. The working of a microwave oven involves

A. absorption of microwaves by matter

B. reception on microwaves by optical fibre

C. microwave amplification by stimulated emission of radiation

D. transmission of microwaves through a metal

Answer: C

Watch Video Solution

111. A cyclotron accelerates particles of mass m and charge q. The energy of particles emerging is proportional to

A. q^2/m

B. q/m^2

C. q^2/m^2

D. q

Answer: A

Watch Video Solution

112. The electric field inside a perfectly conducting hollow object is

A. 4π

B. infinite

C. zero

D. dependent upon the shape of the object

Answer: A

Watch Video Solution

113. If a charged particle $(+q)$ is projected with certain velocity parallel to the magnetic field, then it will

A. trace helical path

B. trace circular path

C. continue its motion without any change

D. come to rest instantly

Answer: C

Watch Video Solution

114. Match List I with List II and select the correct answer using the code given below the Lists:

	List I (Physical quantity)		List II (Unit)
$A.$	Distance	1.	Mole
$B.$	Amount of material	2.	Coulomb
$C.$	Amount of electrical change	3.	Light year
$D.$	energy	4.	Watt hour

A.

A	B	C	D
3	1	2	4

B. $\begin{matrix} A & B & C & D \\ 3 & 2 & 1 & 4 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 4 & 2 & 1 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 4 & 1 & 2 & 3 \end{matrix}$

Answer: A

Watch Video Solution

115. When you walk on a woolen carpet and bring your finger near the metallic handle of a door an electric shock is produced. This is because

A. charge is transferred form your body to the handle

B. a chemical reaction occurs when you touch the handle

C. the temperature of the human body is higher than that of the handle

D. the human body and the handle arrive at thermal equilibrium by the process

Answer: A

Watch Video Solution

116. The product of counductivity and resistivity of a conductor

A. depends on pressure applied

B. depends on current flowing through conductor

C. is the same for all conductors

D. varies from conductor to conductor

Answer: C

Watch Video Solution

117. We use CFL to save electrical energy and to provide surfficient light. The full form of CFL is

A. Condensed filament light

B. Compact filament lamp

C. Condensed fluorescent lamp

D. Compact fluorescent lamp

Answer: D

Watch Video Solution

118. Two long wires each carrying a d.c. current in the same direction are placed close to each other. Which one of the following statements is correct?

A. The wires will attract each other

B. The wires will repel each other

C. There will be no force between the wires

D. There will be a force between the wires only at the moment when the current is switched ON or OFF

Answer: A

Watch Video Solution

119. Three equal resistances when combined in series are equivalent to 90 ohm. Their equivalent resistance when

combined in parallel will be:

A. 10 ohm

B. 30 ohm

C. 270 ohm

D. 810 ohm

Answer: A

Watch Video Solution

120. Which of the following are the properties of an electron?

1. Electron is a constituent of cathode ray

2. Electron is a nagatively charged particle

3. The mass of the electron is equal to the mass of the proton

4. Electron is deflected by tyhe electric field but not by

magnetic field

Select the correct answer using the code given below:

A. 1 and 2 only

B. 1,2 and 3

C. 3 and 4

D. 1 and 4

Answer: A

Watch Video Solution

121. The resistance of wire of length l and area of cross-section a is x ohm. If the wire is stretched to double its length, its resistance would become:

A. 2 x ohm

B. 0.5 x ohm

C. 4 x ohm

D. 6 x ohm

Answer: C

Watch Video Solution

122. Magnetic meridian is an imaginary:

A. line along north-south

B. point

C. vertical plane

D. horizontal plane

Answer: C

Watch Video Solution

123. A simple circuit contains a 12 V battery and a bulb having 24 ohm resistance. When you turn on the switch, the ammeter connected in the circuit would read

A. $0.5A$

B. $2A$

C. $4A$

D. $5A$

Answer: A

Watch Video Solution

124. Three resistors with magnitudes 2,4 and 8 ohm are connected in parallel. The equivalent resistance of the system would be

A. less than 2 ohm

B. more than 2 ohm but less than 4 ohm

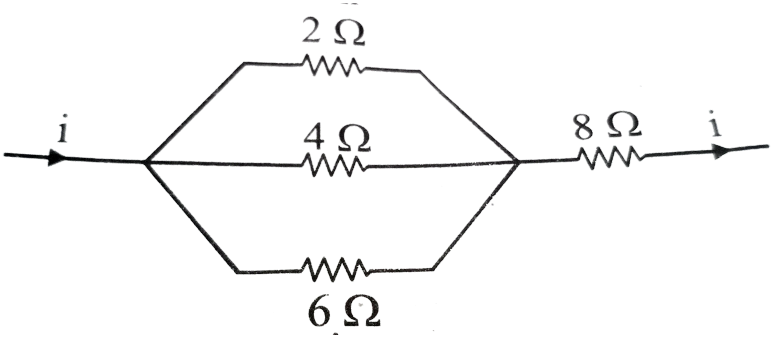
C. 4 ohm

D. 14 ohm

Answer: A

Watch Video Solution

125. Consider the following circuit :



The equivalent resistance of the circuit will be

A. 12Ω

B. $8\frac{11}{12}\Omega$

C. $9\frac{1}{11}\Omega$

D. $\frac{24}{25}\Omega$

Answer: C

Watch Video Solution

126. A given conductor carrying a current of 1 A produces an amount of heat equal to 2000 J. If the current through the conductor is doubled, the amount of heat produced will be

A. 2000 J

B. 4000 J

C. 8000 J

D. 10000 J

Answer: C

Watch Video Solution

127. Which one of the following devices changes low voltage alternating current to high voltage alternating current and vice versa?

A. Generator

B. Motor

C. Transformer

D. Vibrator

Answer: C

Watch Video Solution

128. At which place Earth's magnetic field becomes horizontal?

Watch Video Solution

129. A circular coil of single turn has a resistance of 20Ω Which one of the following is the correct value for the resistance

between the ends of any diameter of the coil?

A. 5Ω

B. 10Ω

C. 20Ω

D. 40Ω

Answer: A

Watch Video Solution

130. In a solenoid, the corrent flowing through the wire is I and number of turns per unit length is n. This gives a magnetic field B inside the solenoid. If number of turn per unit length is increased to 2n, what will be the value of magnetic field in the solenoidgt

A. B

B. 2 B

C. $B/2$

D. $B/4$

Answer: B

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131. Which one of the following statements is correct with regard to the material of electrical insulators?

A. They contain no electrons

B. Electrons do not flow easily through them

C. They are crystals

D. They have more number of electrons than the protons on their surface

Answer: B

Watch Video Solution

132. Which one of the following physical quantities does NOT affect the resistance of a cylindrical resistor?

A. The current through it

B. Its length

C. The resistivity of the material used in the resistor

D. The area of cross-section of the cylinder

Answer: A

Watch Video Solution

133. Suppose a rod is given a negative charge by rubbing it with wool. Which one of the following statements is correct in this case?1

A. The positive charges are transferred from rod to wool

B. The positive charges are transferred from wool to rod

C. The negative charges are transferred from rod to wool

D. The negative charges are transferred from wool to rod

Answer: A

Watch Video Solution

134. If the potential difference applied to an X-ray tube is doubed while keeping the separation between the filament and the target as same, what will happen to the cutoff wavelength?

A. Will remain same

B. Will be doubled

C. Will be halved

D. Will be four times of the original wavelength

Answer: c

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135. A positive charge $+q$ is placed at the centre of a hollow metallic sphere of inner radius a and outer radius b. The electric field at a distance r from the centre is denoted by E. In this regard, which one of the following statements is correct?

A. $E = 0 \quad \text{for} \quad a < r < b$

B. $E = 0 \quad \text{for} \quad r < a$

C. $E = q/4\pi\varepsilon_0 r \quad \text{for} \quad a < r < b$

D. $E = q/4\pi\varepsilon_0 a \quad \text{for} \quad r < a$

Answer: A

Watch Video Solution

136. The symbol of SI unit of inductance is H. It stands for

A. Holm

B. Halogen

C. Henry

D. Hertz

Answer: C

Watch Video Solution

137. The majority charge carriers in P -type semiconductor are

A. free electrons

B. conduction electrons

C. ions

D. holes

Answer: D

Watch Video Solution

138. Step-up transformers are used for

A. increasing electrical power

B. decreasing electrical power

C. decreasing voltage

D. increasing voltage

Answer: D

Watch Video Solution

139. On what factors does the force experienced by a current-carrying conductor placed in a uniform magnetic field depend?

A. Zero

B. Depends upon length of the magnet

C. Never zero

D. Depends upon temeperature

Answer: A

Watch Video Solution

140. Which one of the following devices is non-ohmic?

A. Conducting copper coil

B. Electric heating coil

C. Semi conductor diode

D. Rheostat

Answer: C

Watch Video Solution

141. Which one of the following statements about magnetic field lines is NOT correct?

A. They can emanate from a point

B. They do not cross each other

C. Field lines between two poles cannot be precisely straight lines at the ends

D. There are no field lines within a bar magnet

Answer: D

Watch Video Solution

142. The magnetic field strength of a current-carrying wire at a particular distance from axis of the wire

A. depends upon the current in the wire

B. depends upon the radius of the wire

C. depends upon the temperature of the surroundings

D. None of the above

Answer: A

Watch Video Solution

143. If a free electron moves through a potential difference of 1 kV, then the energy gained by the electron is given by

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

B. $1.6 \times 10^{-16} J$

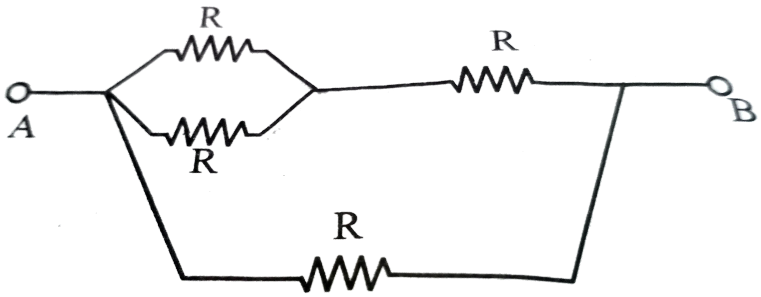
C. $1 \times 10^{-19} J$

D. $1 \times 10^{-16} J$

Answer: B

Watch Video Solution

144. Consider the following circuit:



Which one of the following is the value of the resistance between points A and B in the circuit given above?

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

B. $\frac{3}{5}R$

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

D. $4R$

Answer: B

Watch Video Solution

145. The connecting cable of electrical appliance like electric iron, water heater or room heater contains three insulated copper wires of three different colours-red, green and black. Which one of the following is the correct colour code?

A. Red-live wire, Green-neutral wire, Black-ground wire

B. Red-neutral wire, Green-ground wire, Black-live wire

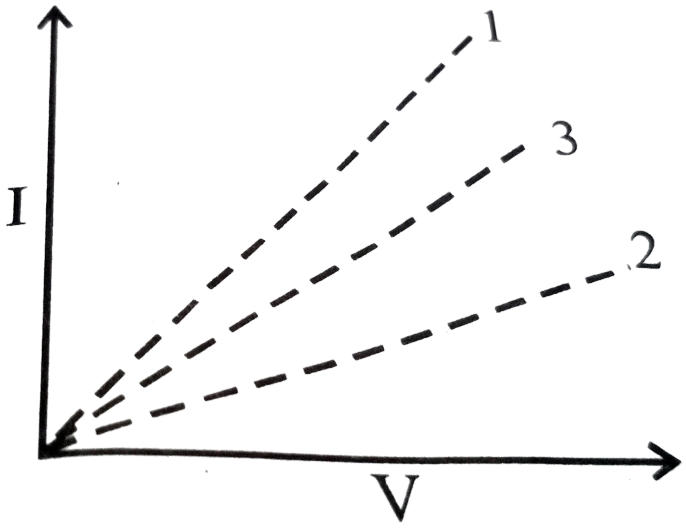
C. Red-live wire, Green-ground wire, Black-neutral wire

D. Red-ground wire, Green-live wire, Black-neutral wire

Answer: C

 Watch Video Solution

146. The graphs between current (1) and voltage (v) for three linear resistors 1,2 and 3 are given below:



If R_1, R_2 and R_3 are the resistances of these resistors, then which one of the following is correct?

A. $R_1 > R_2 > R_3$

B. $R_1 < R_3 < R_2$

C. $R_3 < R_2 < R_1$

D. $R_3 > R_2 > R_1$

Answer: B

Watch Video Solution

147. A circular coil of radius R having N number of turns carries a steady current I. The matnetic induction at the centre of the coil is 0.1 tesla. If the number of turns is doubled and the radius is halved, wyhich one of the following will be the correct value for the magnetic induction at the centre of the coil?

A. 0.05 tesla

B. 0.2 tesla

C. 0.4 tesla

D. 0.8 tesla

Answer: C

Watch Video Solution

148. Which one of the following can charge an insulator?

A. Current electricity

B. Static electricity

C. Magnetic field

D. Gravitational field

Answer: B

Watch Video Solution

149. Let us consider a copper wire having radius r and length l. Let its resistance be R. If the radius of another copper wire is

$2r$ and the length is $l/2$ then the resistance of this, wire will be

A. R

B. 2R

C. $R/4$

D. $R/8$

Answer: D

Watch Video Solution

150. Two metallic wires A and B are made using copper. The radius of wire A is r while its length is l. A dc voltage V is applied across the wire A, causing power dissipation, P. The radius of wire B is 2r, and its length is 2l and the same de

voltage V is appoied across it causing power dissipation P_1. Which one of the following is the correct relationship between P and P_1?

A. $P = 2P_1$

B. $P = P_1/2$

C. $P = 4P_1$

D. $P = P_1$

Answer: B

Watch Video Solution

151. Consider the following statements about a solenoid:

1. The magnetic field strength in a solenoid depends upon the number of turns per unit length in the solenoid.

2. The magnetic field strength in a solenoid depends upon the current flowing in the wire of the solenoid.

3. The magnetic field strength in a solenoid depends upon the diameter of the solenoid.

Which of the statements given above are correct?

A. 1,2 and 3

B. 1 and 3 only

C. 2 and 3 only

D. 1 and 2 only

Answer: D

Watch Video Solution

152. A fuse wire be

A. conducting and of low melting point

B. conducting and of high melting point

C. insulator and of high melting point

D. insulator and of low melting point

Answer: A

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