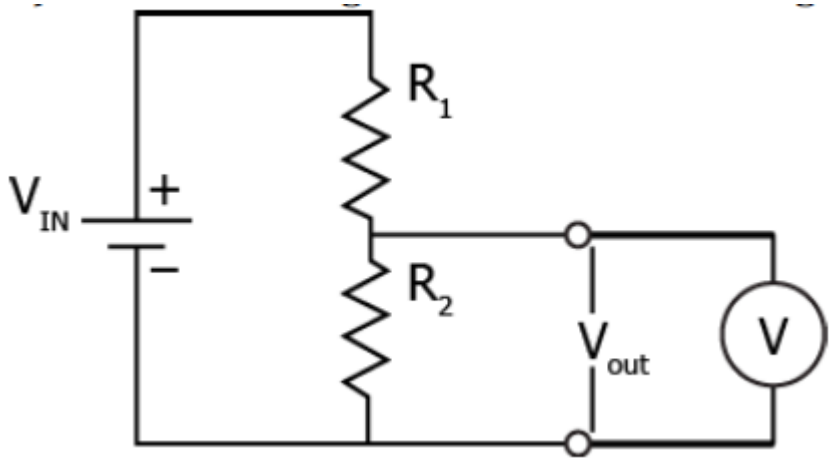
Q1) The image shows a circuit diagram.



What is being measured using the voltmeter?

(a) Current in the circuit

(b) Voltage in the circuit

(c) The voltage across the resistor

(d) The resistance offered by the resistor

Correct Answer: Option (c)

Q2) The least resistance obtained by using 2 Ω, 4 Ω, 1 Ω and 100 Ω is

(a) < 100 Ω

(b) < 4 Ω

(c) < 1 Ω

(d) > 2 Ω

Correct Answer: Option (c)

Q3) Work of 14 J is done to move 2 C charge between two points on a conducting wire. What is the potential difference between the two points?

(a) 28 V

(b) 14 V

(c) 7 V

(d) 3.5 V

Correct Answer: Option (c)

Q4) A fuse wire repeatedly gets burnt when used with a good heater. It is advised to use a fuse wire of

(a) More length

(b) Less radius

(c) Less length

(d) More radius

Correct Answer: Option (d)

Q5) A circuit has a charge of 2C moving through it in 3 s. Which electrical component in the circuit, if present, will show the current?

(a) Voltmeter will show a current of 6 A

(b) Ammeter will show a current of 0.7 A

(c) Rheostat will show a current of 0.7 A

(d) Resistor will show a current of 0.35 A

Correct Answer: Option (b)

Q6) Electrical resistivity of a given metallic wire depends upon

(a) Its length

(b) Its thickness

(c) Its shape

(d) Nature of the material

Correct Answer: Option (d)

Q7) Two devices are connected between two points, say A and B, in parallel. The physical quantity that will remain the same between the two points is

(a) Current

(b) Voltage

(c) Resistance

(d) None of these

Correct Answer: Option (b)

Q8) Unit of electric power may also be expressed as

(a) Volt-ampere

(b) Kilowatt-hour

(c) Watt second

(d) Joule second

Correct Answer: Option (b)

Q9) What is the relationship between resistance and current?

(a) They are directly related to each other

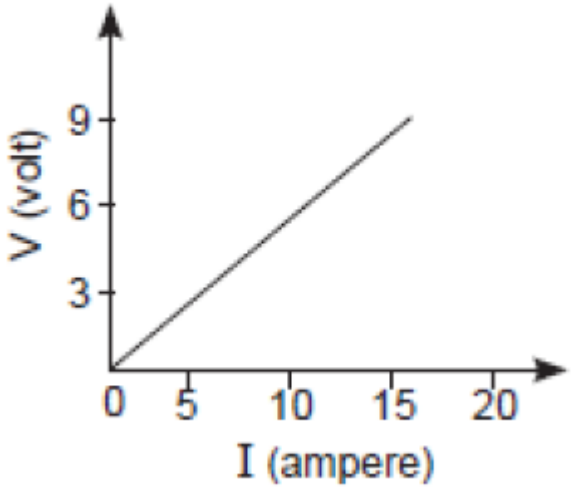
(b) They are inversely related to each other

(c) The resistance has a greater magnitude than the current

(d) The current has a greater magnitude than the resistance

Correct Answer: Option (b)

Q10) The resistance whose V – I graph is given below is



(a) 5/3 Ω

(b) 3/5 Ω

(c) 5/2 Ω

(d) 2/5 Ω

Correct Answer: Option (b)

Q11) A current of 1 A is drawn by a filament of an electric bulb. The number of electrons passing through a cross-section of the filament in 16 seconds would be roughly

(a) 10^{20}

(b) 10^{16}

(c) 10^{18}

(d) 10^{23}

Correct Answer: Option (a)

Q12) How much more heat is produced if the current is doubled?

(a) Twice the original amount

(b) Thrice the original amount

(c) Four times the original amount

(d) Five times the original amount

Correct Answer: Option (c)

Q13) Which of the following represents voltage?

(a) Work done / Current × Time

(b) Work done × Charge

(c) Work done × Time / Current

(d) Work done × Charge × Time

Correct Answer: Option (a)

Q14) A cooler of 1500 W, 200 volts and a fan of 500 W, 200 volts are to be used from a household supply. The rating of the fuse to be used is

(a) 2.5 A

(b) 5.0 A

(c) 7.5 A

(d) 10 A

Correct Answer: Option (d)

Q15) Which combination of a 2 Ω resistor and 4 Ω resistor offers the least resistance to current in the circuit?

(a) Series combination, which results in a net resistance of 2 Ω

(b) Parallel combination, which results in a net resistance of 2 Ω

(c) Series combination, which results in a net resistance of 1.5 Ω

(d) Parallel combination, which results in a net resistance of 0.5 Ω

Correct Answer: Option (d)

Q16) In an electrical circuit, two resistors of 2 Ω and 4 Ω, respectively, are connected in series to a 6 V battery. The heat dissipated by the 4 Ω resistor in 5 s will be

(a) 5 J

(b) 10 J

(c) 20 J

(d) 30 J

Correct Answer: Option (c)

Q17) In order to reduce electricity consumption at home, what kind of appliance should one purchase?

(a) One which draws low power

(b) One which produces less heat

(c) One which operates at a higher voltage

(d) One which draws a high amount of current

Correct Answer: Option (a)

Q18) If n resistors each of resistance R are connected in parallel combination, then their equivalent resistance is

(a) R/n^2

(b) n^2/R

(c) n/R

(d) R/n

Correct Answer: Option (d)

Q19) Which one among a bar of an alloy of mass 2 kg and a 3 kg iron bar of the same dimension has greater resistivity?

(a) Iron bar because it has a higher mass

(b) Alloy bar because it has a lower mass

(c) Iron bar because it has the same types of atoms

(d) Alloy bar because it has different types of atoms

Correct Answer: Option (d)

Q20) Two resistors connected in series give an equivalent resistance of 10 Ω. When connected in parallel, give 2.4 Ω. Then the individual resistance is

(a) each of 5 Ω

(b) 6 Ω and 4 Ω

(c) 7 Ω and 4 Ω

(d) 8 Ω and 2 Ω

Correct Answer: Option (b)

Q21) A battery of 10 volt carries 20,000 C of charge through a resistance of 20 Ω. The work done in 10 seconds is

(a) 2×10^3 joule

(b) 2×10^5 joule

(c) 2×10^4 joule

(d) 2×10^2 joule

Correct Answer: Option (b)

Q22) Two bulbs are rated 40W, 220W and 60W, 220W. The ratio of their resistances will be

(a) 4:3

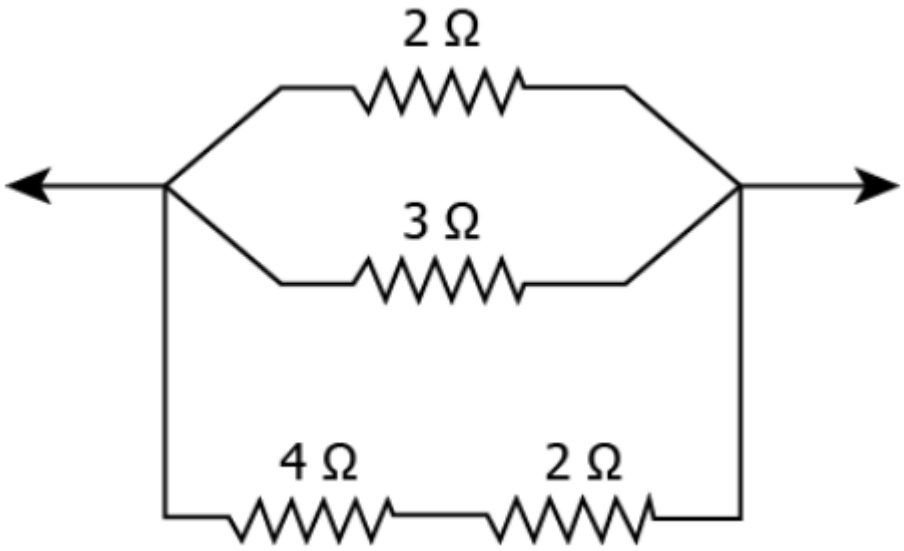
(b) 3:4

(c) 2:3

(d) 3:2

Correct Answer: Option (d)

Q23) The image shows a combination of 4 resistors.



What is the net resistance between the two points in the circuit?

(a) 0.5 Ω

(b) 1.0 Ω

(c) 1.5 Ω

(d) 2.0 Ω

Correct Answer: Option (b)

Q24) If R1 and R2 be the resistance of the filament of 40 W and 60 W, respectively, operating 220 V, then

(a) R1 < R2

(b) R2 < R1

(c) R1 = R2

(d) R1 ≥ R2

Correct Answer: Option (b)

Q25) An electric toaster has a power rating of 200 W. It operates for 1 hour in the morning and 1 hour in the evening. How much does it cost to operate the toaster for 10 days at Rs. 5 per kW h?

(a) Rs. 20

(b) Rs. 400

(c) Rs. 5000

(d) Rs. 10000

Correct Answer: Option (a)

Q26) A coil in the heater consumes power P on passing current. If it is cut into halves and joined in parallel, it will consume power

(a) P

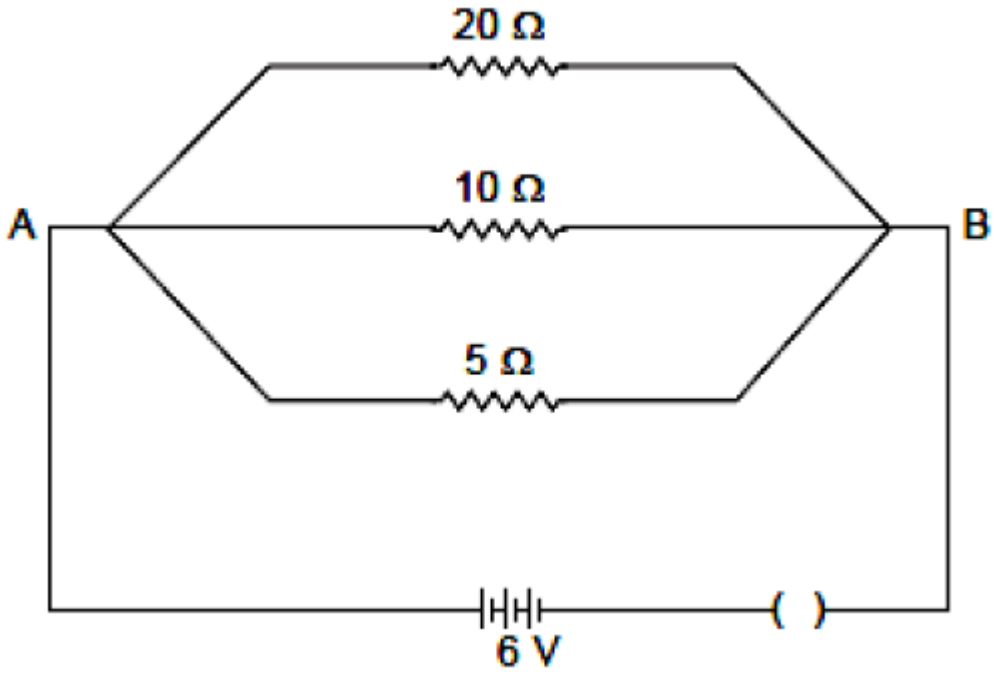
(b) P/2

(c) 2 P

(d) 4 P

Correct Answer: Option (d)

Q27) Calculate the current flow through the 10 Ω resistor in the following circuit.



(a) 1.2 A

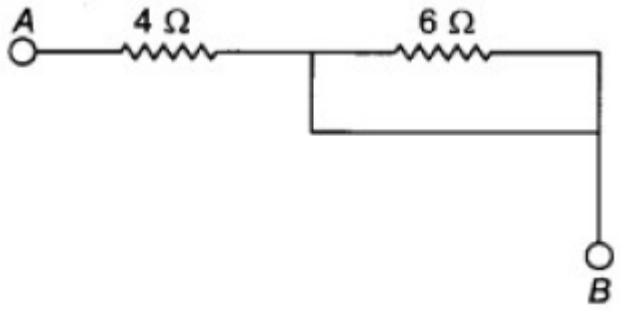
(b) 0.6 A

(c) 0.2 A

(d) 2.0 A

Correct Answer: Option (b)

Q28) The effective resistance between A and B is



(a) 4 Ω

(b) 6 Ω

(c) May be 10 Ω

(d) Must be 10 Ω

Correct Answer: Option (a)

Q29) In this question, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following:

Assertion: In an open circuit, the current passes from one terminal of the electric cell to another.

Reason: Generally, the metal disc of a cell acts as a positive terminal.

(a) Both the Assertion and the Reason are correct, and the Reason is the correct explanation of the Assertion.

(b) The Assertion and the Reason are correct, but the Reason is not the correct explanation of the Assertion.

(c) Assertion is true, but the Reason is false.

(d) The statement of the Assertion is false, but the Reason is true.

Correct Answer: Option (d)