Foundation

UDAAN 2025

PHYSICS

DHA : 02

Electricity

Q1 The formula for Ohm's law is

(A) I = V/R
(B) V = IR
(C) R = V/I
(D) All are correct

Q2 According to Ohm's Law, what is the current (I) when 500 Voltage (V) is supplied to a 2K Resistance (R)?

(A) 0.50 Amp (B) 0.25 Amp
(C) 0.75 Amp (D) 4 Amp

Q3 When a bulb uses 0.25A from a 24V battery source, what is its Resistance (R) ?

(A) 50Ω (B) 96Ω
(C) 95Ω (D) 72Ω

Q4 A wire's resistance is y. When the wire is extended to three times its original length, the resistance is

(A) 5y (B) 3y
(C) 6y (D) y/6

Q5 If a circuit has two unequal resistances in parallel, then

(A) In a big resistance, a lot of current flows.
(B) both currents are the same
(C) the potential difference between them is the same.
(D) A lower resistance equals a lower conductivity.

Q6 At both ends of a copper wire of length l and diameter d, a potential difference V is applied. V is the drift velocity. When the wire diameter is d/4, the drift velocity becomes-

(A) V/16 (B) 16V
(C) V (D) V/4

Q7 The resistivity of the materials depends on

(A) Length of the wire
(B) Diameter of the wire
(C) Density of the wire
(D) Material of the wire

Q8 What is the unit of resistivity

(A) ohm meter
(B) ohm$meter^{-1}$
(C) ohm^{-1}
(D) ohm $meter^{2}$

Q9 What is electric current?

(A) Rate of change of voltage
(B) Rate of change of resistance
(C) Rate of flow of charge
(D) Rate of flow of power

Answer Key

Q1 (D)

Q2 (B)

Q3 (B)

Q4 (B)

Q5 (C)

Q6 (C)

Q7 (D)

Q8 (A)

Q9 (C)

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:
where V is voltage, I is current and R is resistance

Video Solution:

Q2 Text Solution:
V=IR is used to solve

Video Solution:

Q3 Text Solution:
V=IR is used to solve

Video Solution:

Q4 Text Solution:
conductor's resistance is exactly proportionate to its length. That is, if the length of a conductor is tripled, the resistance of the conductor is likewise tripled.

Video Solution:

Q5 Text Solution:
When resistors are connected in series, the potential difference between them is the same.

Video Solution:

Q6 Text Solution:
Drift velocity is proportional to material area, i.e. V=I/nAq.

Video Solution:

Q7 Text Solution:
Resistivity or specific resistance is defined as the resistance of a resistor per unit area per unit length. It does not depend on the area of cross section and the length of the resistor. It only depends on the material and the temperature of the resistor.

Video Solution:

Q8 Text Solution:
SI unit of Resistivity is **ohm m ($\Omega \cdot m$)**

Video Solution:

Q9 Text Solution:
Current is rate of flow of charge.

Video Solution: