13

CURRENT ELECTRICITY

MCQs from Previous Papers

Fully Solved Original ECAT MCQs-2008

1. In metals, current is
(A) Conventional (B) Electronic✓ (C) Both (A) and (B)
(D) Due to positive charges

2. Electric field and direction of flow of electronic current in a conductor are
(A) Parallel (B) Antiparallel✓ (C) Perpendicular
(D) Inclined to each other

3. If 1.6 A of current flows through a copper wire of cross sectional area 1 mm^2 and if the free electron density in copper is 8×10^{28} per m^3 then the drift velocity of electrons in ms^{-1}
(A) 12.5×10^{-4} (B) 1.25×10^{-4}✓ (C) 2.5×10^{-5} (D) 12.5×10^{-5}

4. All of the following statements are incorrect except:
(A) Silver is the best conductor followed by aluminium and then copper
(B) Copper is the best conductor followed by silver and then aluminium
(C) Copper is the best conductor followed by aluminium and then silver
(D) Silver is the best conductor followed by copper and then aluminium✓

5. In a discharge tube, the number of hydrogen ions (i.e., protons) drifting across a cross section per second is 1.2×10^{18} while the number of electrons drifting in opposite direction is 2.8×10^{18} per second. The current through the tube will be:
(A) 0.64 A✓ (B) 64 A (C) 0.19 A (D) 0.44 A

Fully Solved Original ECAT MCQs-2009

1. Secondary cells are
(A) Non-chargeable (B) Rechargeable✓ (C) Like primary cells (D) None of these

2. When current is passed through a wire, heat is produced due to;
(A) inter atomic collision (B) inter electrons collision
(C) collision of conduction electrons with particles✓ (D) none of these

3. The heating element of an electric iron is made of:
(A) Iron (B) Nichrome (C) Constantan (D) Tungsten✓

4. Charge carriers responsible for conduction in an electrolyte are:
(A) electrons only (B) +ve ions only (C) –ve ions only
(D) both +ve & –ve ions✓

5. During electrolysis, density of electrolyte
(A) Increases (B) Decreases (C) Remains unchanged✓ (D) May increase or decrease

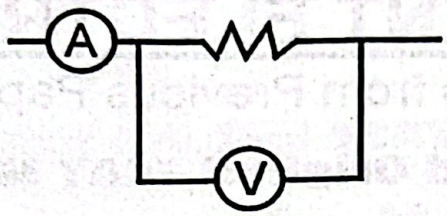
6. In case of tungsten filament, the deviation of V-I graph from straight line is due to:
(A) Increase in potential difference (B) Increase in current
(C) Increase in resistance✓ (D) All of these

7. Slope of V-I graph for an ohmic substance gives:
(A) Conductance (B) Resistance✓ (C) Conductivity
(D) Temperature co-efficient of resistance

8. Which of these is a non-linear device?
(A) Tungsten filament (B) Semiconductor (C) Transistor (D) All of these✓

Fully Solved Original ECAT MCQs-2010

1. If reading on the ammeter A increases as shown in the figure, then reading on voltmeter V



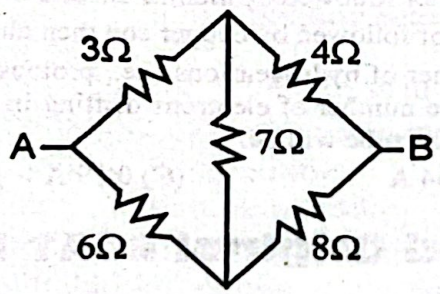
(A) Decreases in the same ratio (B) Increases in the same ratio✓
(C) Decreases in the same ratio (D) Increases but not in the same ratio

2. In short circuit, resistance is _____ and in open circuit, resistance is _____.
(A) Zero, ∞✓ (B) ∞, Zero (C) 1, Zero (D) Variable, Zero

3. In series combination, equivalent resistance is:
(A) Equal to the smallest individual resistance (B) Equal to the largest individual resistance
(C) Less than the smallest individual resistance (D) Greater than the largest individual resistance✓

4. For series combination of resistance, P.D across each resistor _____ and current through each resistor
(A) Varies, varies (B) Varies, is same✓ (C) is same, is same (D) is same, varies

5. Equivalent resistance between points A and B is

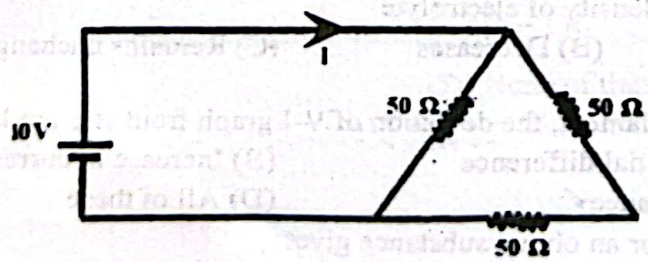


(A) $\frac{14}{3}$ ohm✓ (B) 14 ohm (C) $\frac{20}{3}$ ohm (D) 21 ohm

Fully Solved Original ECAT MCQs-2011

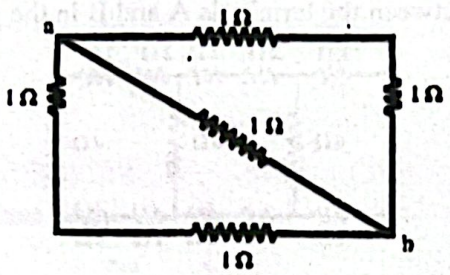
1. If we have five resistors each of 1/5 Ω, then minimum resistance we can obtain by combining them is
(A) $\frac{1}{25}$ Ω✓ (B) $\frac{1}{5}$ Ω (C) $\frac{1}{100}$ Ω (D) $\frac{1}{75}$ Ω

2. What is the current in the circuit below:



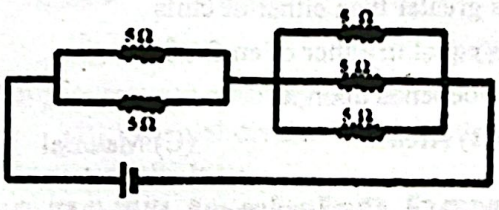
(A) 0.3 A✓ (B) 0.2 A (C) 0.1 A (D) None of these

3. Equivalent resistance across the points 'a' and 'b' is:



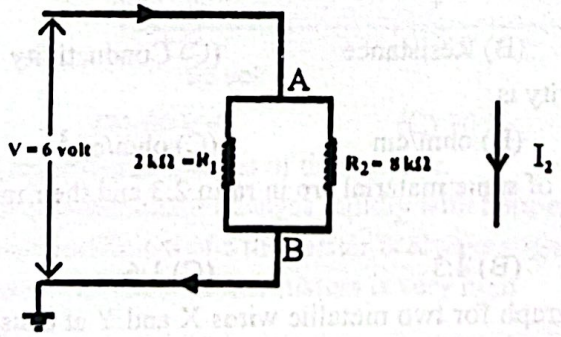
(A) 2Ω (B) $\frac{3}{5}\Omega$ (C) 5Ω (D) $\frac{1}{2}\Omega$ ✓

4. What is the equivalent resistance of the circuit?



(A) $\frac{6}{25}\Omega$ (B) $\frac{25}{6}\Omega$ ✓ (C) $\frac{25}{3}\Omega$ (D) $\frac{3}{25}\Omega$

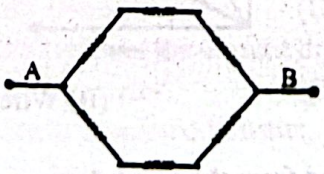
5. The circuit shown in the figure has two resistors having resistances R_1 and R_2. The current I_2 through resistor R_2 is:



(A) 0.75 mA✓ (B) 1.5 mA (C) 1.2 mA (D) 2 mA

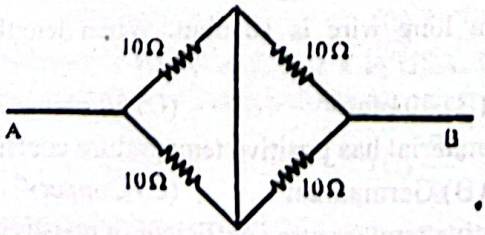
Fully Solved Original ECAT MCQs-2012

1. Six identical resistors, each of 1 ohm, are connected as shown. The equivalent resistance between A and B is:



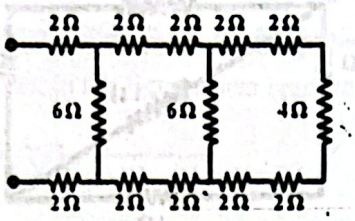
(A) 1 Ω (B) 1.5 Ω✓ (C) 2.5 Ω (D) 3 Ω

2. In the circuit shown in the figure, the equivalent resistance between points A and B:



(A) 25 Ω (B) 10 Ω✓ (C) 20 Ω (D) 30 Ω

3. The equivalent resistance between the terminals A and B in the given network is:



(A) 30Ω (B) 40Ω (C) 16Ω (D) 8Ω✓

4. Two non-ideal batteries are connected in parallel, then:
(A) The equivalent emf is less than either of the emfs
(B) The equivalent emf is greater than either of emfs
(C) The equivalent emf is equal to either of emfs ✓ (D) None of these

5. Resistance of a conductor depends upon its
(A) Length (B) Area (C) Material (D) All of these✓

Fully Solved Original ECAT MCQs-2013

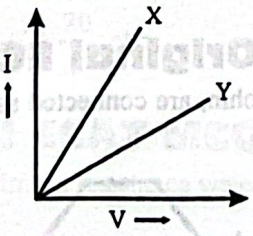
1. If a wire is cut into two equal halves then resistivity of each half
(A) Is doubled (B) Is halved (C) Remains same✓ (D) Is increased by times

2. Siemens is the unit of
(A) Conductance✓ (B) Resistance (C) Conductivity (D) Resistivity

3. The SI unit of resistivity is
(A) ohm/m (B) ohm/cm (C) ohm/cm^2 (D) ohm x m. ✓

4. Lengths of two wires of same material are in ratio 2:3 and their radii have the ratio 1:2. Then ratio of their resistances is:
(A) 1:3 (B) 4:3 (C) 1:6 (D) 8:3✓

5. The voltage current graph for two metallic wires X and Y at constant temperature is shown in the figure. Assuming that the two wires have same length and same diameter, the resistivity of:



(A) Wire X is greater than wire Y (B) Wire Y is greater than wire X✓
(C) Both wires is same
(D) Resistivity can't be predicted from the given data

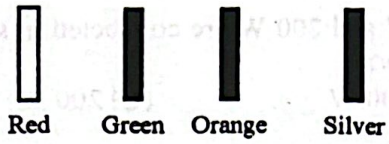
Fully Solved Original ECAT MCQs-2014

1. The resistance of 20 cm long wire is 10 ohm. When length is changed to 40 cm, then resistance is
(A) 10 ohm (B) 40 ohm✓ (C) 30 ohm (D) 20 ohm

2. Which of the following material has positive temperature coefficient of resistivity?
(A) Silicon (B) Germanium (C) Copper✓ (D) Both (A) and (B)

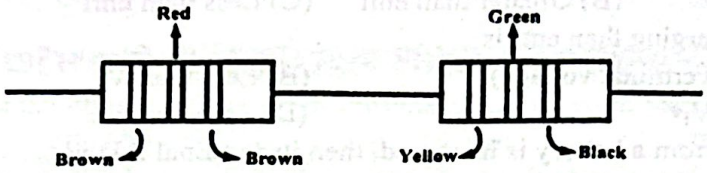
3. Which material has negative temperature coefficient of resistivity?
(A) Steel (B) Iron (C) Tungsten (D) Silicon✓

4. From figure, resistance of carbon resistor is equal to



(A) 25 K ohm ± 5% (B) 20 K ohm ± 10% (C) 25 K ohm ± 10%✓ (D) 30 K ohm ± 5%

5. The combined resistance of the two-resistors connected as in figure below is about:

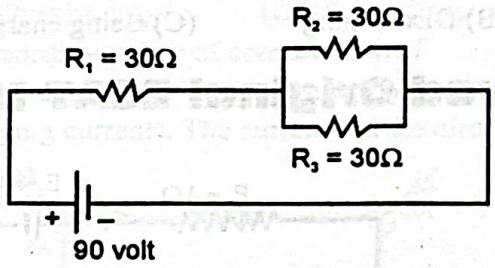


(A) 120 Ω (B) 145 Ω (C) 165 Ω✓ (D) 155 Ω

6. Rheostat connected in parallel with a battery acts as a

(A) Variable resistor (B) Potential divider✓ (C) Both *(A)* and (B) (D) Bridge

7. The potential difference across R_1 is



(A) 30 V (B) 60 V✓ (C) 90 V (D) 0 V

8. Choose incorrect regarding properties of thermistors:

(A) The resistance of a thermistor changes rapidly with temperature
(B) The temperature coefficient of a thermistor is always negative✓
(C) The temperature coefficient of thermistors is very high
(D) None of these

Fully Solved Original ECAT MCQs-2015

1. Thermistors are made of

(A) Metallic oxides✓ (B) Silver (C) Brass (D) Cu

2. Which of these is a temperature sensor?

(A) Rheostat (B) Thermistor✓ (C) Voltage divider (D) None of these

3. If a bulb is operated by 220 volts and the current drawn by it is 0.5 A then power dissipated is

(A) 100 watt (B) 110 watt✓ (C) 60 watt (D) 120 watt

4. Electrical power of a battery is expressed in watts, 1 watt =

(A) $\frac{1V}{1A}$ (B) $\frac{1A}{1V}$ (C) 1V × 1A✓ (D) $1V \times 1A^2$

5. A (100 W, 200 V) bulb is connected to a 160 V power supply. The power consumption would be

(A) 125 W (B) 100 W (C) 80 W (D) 64 W✓

6. Supply voltage in Pakistan is 220 V and 110 V in USA. If the resistance of a 60 watt bulb for use in Pakistan is R, then resistance of same bulb in America is

(A) R (B) $\frac{R}{4}$✓ (C) $\frac{R}{2}$ (D) 2R

7. Three bulbs of 60 watt and 100 watt and 200 watt are connected in parallel. Which bulb will glow with maximum brilliance?

(A) 60 watt bulb (B) 100 watt bulb (C) 200 watt bulb✓
(D) All have same brilliance

8. If three bulbs of 50 W, 100 W and 200 W are connected in series across 220 V mains, then which bulb will show maximum glow?
(A) 50 W✓ (B) 100 W (C) 200 W (D) All will glow equally

Fully Solved Original ECAT MCQs-2016

1. When a battery is not in operation then V_t is (terminal voltage)
(A) Equal to emf✓ (B) Greater than emf (C) Less than emf (D) Zero

2. If battery is discharging then emf is
(A) Equal to V_t (Terminal voltage) (B) Less than V_t
(C) Greater than V_t✓ (D) Zero

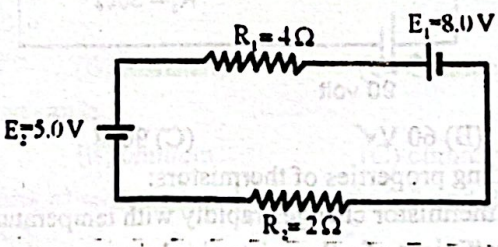
3. If current drawn from a battery is increased, then its terminal P.D is
(A) Constant (B) Increased (C) Decreased✓ (D) Increased or constant

4. A battery whose emf is 40 V has an internal resistance of 5 ohm. If this battery is connected to R = 15 ohm, what will be voltage drop across R?
(A) 10V (B) 20V (C) 30V ✓ (D) 40V

5. Terminal potential difference of a cell is greater than its emf if it is
(A) Not in operation (B) Discharging (C) Being charged✓ (D) Either *(A)* or (C)

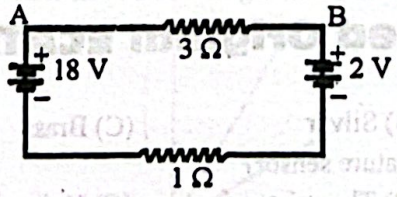
Fully Solved Original ECAT MCQs-2017

1. The current is:



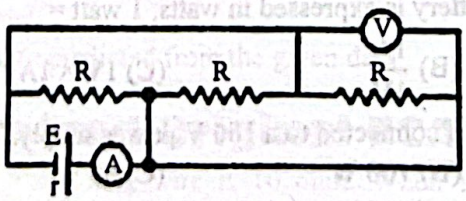
(A) 0.5 A clockwise (B) 0.5 A anticlockwise✓ (C) 0.2 A clockwise
(D) 0.2 A anticlockwise

2. What is the magnitude and direction of flow of current in the figure shown below?



(A) 4A from A to B✓ (B) 5A from A to B (C) 4A from B to A (D) 5A from A to B

3. In the following circuit diagram, E = 4V, r = 1Ω and R = 45Ω, then reading in the ammeter A will be:



(A) 1A (B) $\frac{1}{2}$A (C) $\frac{1}{8}$A (D) $\frac{1}{4}$A ✓

4. What must be the reading in the ammeter for the circuit shown?