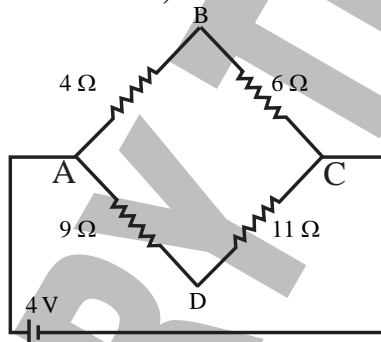


# PHYSICS MDCAT

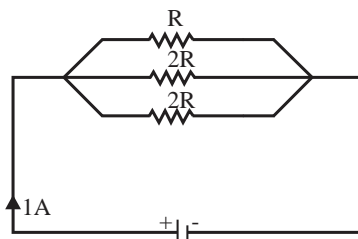
## Current Electricity

### TEST#03 (UNIT # 9)

- Q.86**  $1 \times 10^9$  electrons pass through a conductor in  $10 \mu\text{s}$ . The current in ( $\mu\text{A}$ ) through the conductor is:  
 A) 1.6  
 B) 16  
 C) 0.16  
 D) 160
- Q.87** When will 5 C of charge pass a point in an electrical circuit?  
 A) When 5 A moves through a voltage of 5 V  
 B) When a power of 5 W is used for 5 s  
 C) When the current is 25 mA for 200 s  
 D) When the current is 10 A for 10 s
- Q.88** Which of the following statement is not true?  
 A) Charge carriers in electrolytes are ions  
 B) Charge carriers in gases and plasma are electrons and ions  
 C) Charge carriers in semiconductors are ions and holes  
 D) Charge carriers in metals are free electrons
- Q.89** Four resistance  $4 \Omega$ ,  $6 \Omega$ ,  $9 \Omega$  and  $11 \Omega$  are connected as shown to a battery of emf of 4 V and negligible internal resistance. Now, the value of  $V_D - V_B$  is:



- A) -0.2 V  
 B) 0.4 V  
 C) 0.2 V  
 D) -0.4 V
- Q.90** What is the ammeter reading in the circuit of figure?
- 
- A) 2.0 A  
 B) 1.0 A  
 C) 3.0 A  
 D) 2.5 A
- Q.91** A wire has resistance  $12 \Omega$ . It is bend in form of a square. The effective resistance between any two diagonal vertices of square is:  
 A)  $3 \Omega$   
 B)  $4 \Omega$   
 C)  $12 \Omega$   
 D)  $6 \Omega$
- Q.92** If the current drawn from the battery is "1 A", the current in the circuit shown through "R" will be \_\_\_\_\_?



- A) 0.25 A  
 B) 0.50 A  
 C) 0.75 A  
 D) 1.0 A



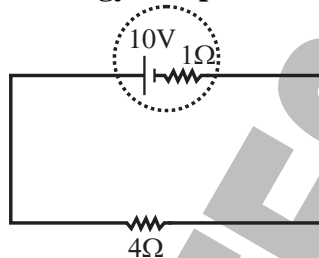
**Q.101** The potential difference between the terminals of a cell in open circuit is 2.2 volt. With resistance of 5 ohm across the terminals of a cell, the terminal potential difference is 1.8 volt. The internal resistance of the cell is:

- A)  $\frac{9}{10}$  ohm  
B)  $\frac{7}{12}$  ohm  
C)  $\frac{10}{9}$  ohm  
D)  $\frac{12}{7}$  ohm

**Q.102** The current flowing through a resistor “R” when connected across a cell of emf “E” and internal resistance “r” is expressed as:

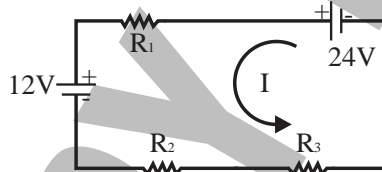
- A)  $\frac{E - V}{R}$   
B)  $\frac{E - V}{r}$   
C)  $\frac{E}{r + R}$   
D)  $\frac{E}{R - r}$

**Q.103** In the circuit shown, the rate of energy dissipation in the external resistor is:



- A) 2 W  
B) 4 W  
C) 16 W  
D) 8 W

**Q.104** The KVL equation for following circuit is:

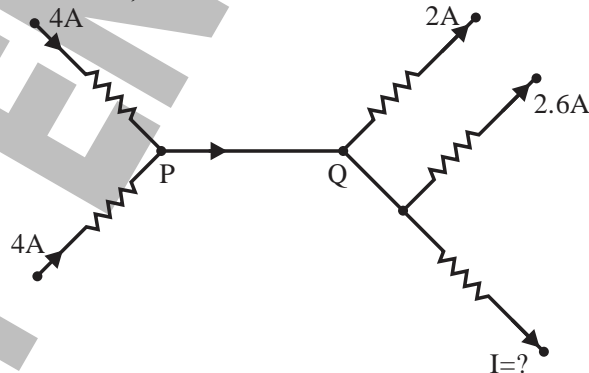


- A)  $24 - IR_1 + 12 - IR_2 - IR_3 = 0$   
B)  $-24 + IR_1 + 12 - IR_2 + IR_3 = 0$   
C)  $24 - IR_1 + 12 - IR_2 + IR_3 = 0$   
D)  $12 - IR_1 - IR_2 - IR_3 = 0$

**Q.105** “If a source of emf is traversed from negative to positive terminal, the potential change is positive, it is negative in opposite direction”, is a statement of:

- A) Kirchhoff’s current law  
B) Kirchhoff’s voltage law  
C) Kirchhoff’s mesh rule  
D) Rule for finding potential change

**Q.106** In the circuit diagram shown, the current “I” will be:



- A) 3.4 A  
B) 1.7 A  
C) 2.3 A  
D) 3.7 A

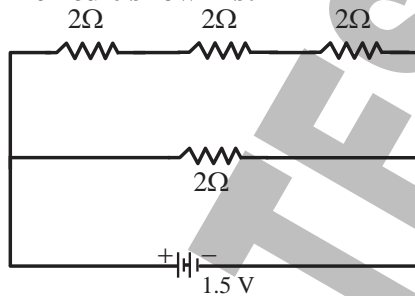
**Q.107** When three identical bulbs of 60 W, 200 V rating are connected in series to a 200 V supply, the power drawn by them will be:

- A) 60 W  
B) 180 W  
C) 10 W  
D) 20 W

**Q.108** The resistor of resistance R is connected to 25 V supply, rate of heat produced in it is 25 J s<sup>-1</sup>. The value of R is:

- A) 225 Ω  
B) 25 Ω  
C) 50 Ω  
D) 125 Ω

- Q.109** The length of a wire is doubled. Its conductance will be:  
 A) Unchanged  
 B) Halved  
 C) Doubled  
 D) Quadrupled
- Q.110** Two 220 V, 100 W bulbs are first connected in series then in parallel. Each time the combination is connected to 220 V supply. The power drawn by the combination in each case respectively will be:  
 A) 200 W, 160 W  
 B) 50 W, 100 W  
 C) 50 W, 200 W  
 D) 100 W, 50 W
- Q.111** Two unequal resistances are connected in parallel across a cell. Which of the following statement is true?  
 A) Same current is set up in both resistors  
 B) Current through smaller resistor is more  
 C) Current through larger resistor is more  
 D) Any of these
- Q.112** Four equal resistors when connected in series dissipate 5 W power. If they are connected in parallel, the power dissipated will be:  
 A) 20 W  
 B) 40 W  
 C) 60 W  
 D) 80 W
- Q.113** Current drawn from cell in circuit shown is:



- A) 1 A  
 B) 4 A  
 C) 5 A  
 D) 2 A
- Q.114** A current of 2.0 A passes through a wire in 1.5 min. The magnitude of charge flowing is:  
 A) 60 C  
 B) 180 C  
 C) 30 C  
 D) 90 C
- Q.115** Temperature coefficient of resistance ( $\alpha$ ) is equal to:  
 A)  $\frac{R_t + R_o}{R_o \Delta t}$   
 B)  $\frac{R_t - R_o}{R_o \Delta t}$   
 C)  $\frac{(R_o - R_t)}{R_o \Delta t}$   
 D) None of these