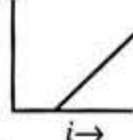
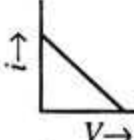
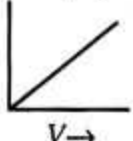
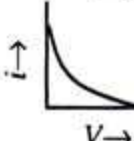
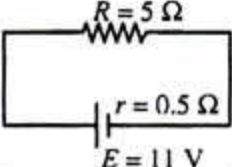

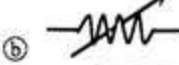
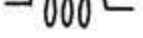

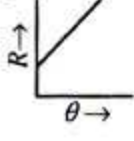
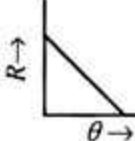
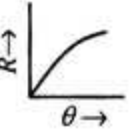
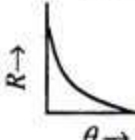
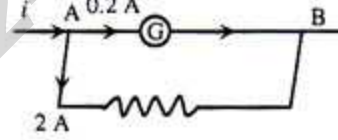


# Chapter Three : Current Electricity

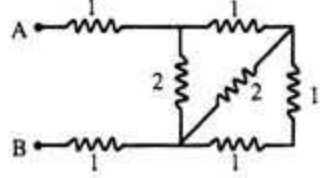
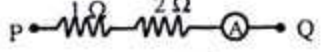
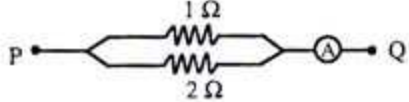
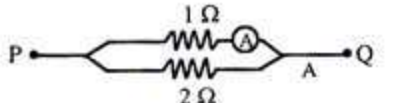
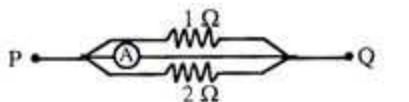
- Which one is the unit of measuring charge flow? [D.B.-15]
  - (a) volt
  - (b) ampere
  - (c) watt
  - (d) ohm
- Which one is unit of current density? [D.B.-16]
  - (a)  $A \cdot m$
  - (b)  $A \cdot m^{-1}$
  - (c)  $A \cdot m^{-2}$
  - (d)  $A \cdot m^{-3}$
- Unit of mechanical equivalent of heat – [All Board-18]
  - (a) cal/gram
  - (b) joule/cal
  - (c) cal/joule
  - (d) joule-cal
- During electric current flow, through the conductor–
  - (a) Proton passes from higher to lower potential
  - (b) Proton passes from lower to higher potential
  - (c) Electrons passed from higher to lower potential
  - (d) Electrons pass from lower to a higher potential
- Through an electric heater 10A electric current is flowing. How much charge will pass if electric current flows for five minutes?
  - (a) 0.5 C
  - (b) 2 C
  - (c) 50 C
  - (d) 3000 C
- Which of the following shows the change in electric current with the change in potential difference of two ends of a constant resistance?
  - (a) 
  - (b) 
  - (c) 
  - (d) 
- 

Determine electric current flow of the figure above? [D.B., J.B.-17]

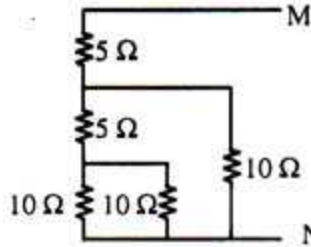
  - (a) 1 A
  - (b) 2 A
  - (c) 2.2 A
  - (d) 2.5 A
- Which of the following has a negative value of temperature coefficient of resistance? [C.B.-15]
  - (a) Al
  - (b) Cu
  - (c) Si
  - (d) Bi
- Which one is the symbol of a rheostat? [B.B.-15]
  - (a) 
  - (b) 
  - (c) 
  - (d) 
- Resistance of a wire is  $r\Omega$ . Its length was doubled by pulling. Determine its final resistance.
  - (a)  $r/2$
  - (b)  $4r$
  - (c)  $2r$
  - (d)  $r/4$
- We use taster to determine phase of electric line. If one end of taster is connected with electric wire and another end is touched with hand the bulb of the tester lights up. Because –
  - (a) Bulb takes heat from body
  - (b) Human body is a conductor
  - (c) The bulb charges up when it is touched
  - (d) It completes the circuit

- If resistance of a metal conductor at  $0^\circ C$  and  $t^\circ C$  are respectively  $R_0$  and  $R_t$  then which one is correct?
  - (a)  $\alpha = \frac{R_t - R_0}{R_0 t}$
  - (b)  $R_t = R_0 (1 - \alpha t)$
  - (c)  $R_0 = R_t (1 + \alpha t)$
  - (d)  $\alpha = \frac{R_t - R_0}{R_t t}$
- Which one shows the change in resistance with temperature? [J.B.-16]
  - (a) 
  - (b) 
  - (c) 
  - (d) 
- A wire's resistance is  $12 \Omega$ . If it is divided into two parts and the parts are then connected in a parallel combination what will be the resistance?
  - (a)  $3 \Omega$
  - (b)  $6 \Omega$
  - (c)  $12 \Omega$
  - (d)  $24 \Omega$
- Which one is the unit of specific resistance? [J.B.-15]
  - (a)  $\Omega \cdot m$
  - (b)  $\Omega \cdot m^{-1}$
  - (c)  $\Omega \cdot m^2$
  - (d)  $\Omega \cdot m^{-2}$
- 

$i = ?$  [R.B.-15, B.B.-15]

  - (a) 0.2 A
  - (b) 1.8 A
  - (c) 2 A
  - (d) 2.2 A
- Determine the equivalent resistance between A and B points. [D.J.-15]
 
  - (a)  $3 \Omega$
  - (b)  $3.5 \Omega$
  - (c)  $4.5 \Omega$
  - (d)  $6 \Omega$
- All of the following circuits have the equal potential difference between P and Q points. Each ammeter's resistance is  $2\Omega$ . Which circuit's ammeter reading will be the highest? [Crg.B.-15]
  - (a) 
  - (b) 
  - (c) 
  - (d) 

19. What is the equivalent resistance between c and d points?



- (a) 4  $\Omega$  (b) 8.75  $\Omega$   
(c) 10  $\Omega$  (d) 13.33  $\Omega$

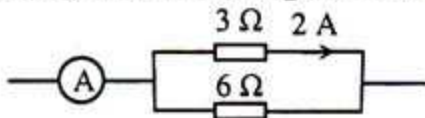
20. If two similar resistances are connected in series then equivalent resistance is 8  $\Omega$ . If they are connected in parallel what will be their equivalent resistance?

- (a) 0  $\Omega$  (b) 2  $\Omega$   
(c) 4  $\Omega$  (d) 8  $\Omega$

21. In which case of the following electric current and voltage will be divided?

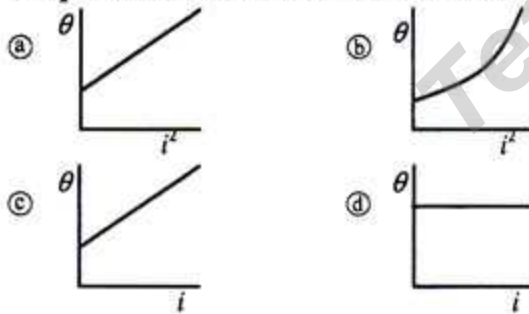
	Electric current	Voltage
(a)	series	series
(b)	series	parallel
(c)	parallel	parallel
(d)	parallel	series

22. What is the ammeter reading of the circuit below?

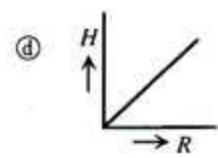
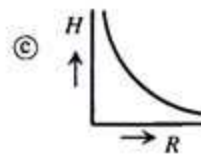
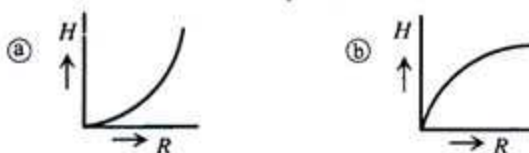
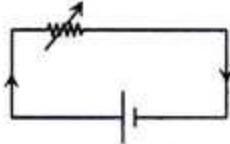


- (a) 1 A (b) 2 A  
(c) 3 A (d) 4 A

23. If a resistor is drowned in water and  $i$  electric current flows through it for  $t$  second and the water temperature becomes  $\theta$  then which one is correct?



24. If only resistance of the circuit mentioned is changed then which graph correctly represents the change in the heat with change in resistance? [R.B.-16]



25. If electric current flows through a specific conductor for a specific time then the heat generated will be electric current flow's-? [Dj.B.-15]

- (a) Inverse square proportional  
(b) Inverse proportional  
(c) Proportional  
(d) Square proportional

26. If electric current and time of current flow are kept unaltered while only resistance is doubled then how will the heat generated due to electric current change? [J.B.-16]

- (a)  $\frac{1}{4}$  (b)  $\frac{1}{2}$   
(c) 2 (d) 4

27. Resistance of a wire is 2 ohm. If everything is kept same but the length is doubled then what will be the resistance? [All Board-18]

- (a) 1 ohm (b) 2 ohm  
(c) 3 ohm (d) 4 ohm

28. Post office box is used - [All Board-18]

- (a) To collect post office bills  
(b) To determine EMF of cells  
(c) To determine unknown resistance of conductors  
(d) To determine electric current of circuit

29. Resistance of a wire is 10  $\Omega$ . It is connected with two ends of an electric cell of 6 V EMF and 5  $\Omega$  internal resistance. Determine terminal voltage of the cell. [Ctg.B.-16]

- (a) 2 V (b) 3 V  
(c) 4 V (d) 6 V

30. If the temperature is increased from 15 $^{\circ}\text{C}$  to 30 $^{\circ}\text{C}$  then which one's resistance will increase with it?

- (a) Copper (b) Silicon  
(c) Carbon (d) Germanium

31. If with a cell, a resistor with greater value than its internal resistance is connected then we get  $i$  electric current. If instead of one, three such cells are connected in parallel combination then electric current will be-

- (a) 0 (b)  $i/3$   
(c)  $i$  (d)  $3i$

32. What is the formula of electric current flow for series combination of two cells?

- (a)  $i_s = \frac{2E}{2r + R}$  (b)  $i_s = \frac{2E}{r + 2R}$   
(c)  $i_p = \frac{2E}{2r + R}$  (d)  $i_p = \frac{2E}{r + 2R}$

33. Which one is the formula of three cells in series combination?

- (a)  $i_s = \frac{3E}{3R + r}$  (b)  $i_s = \frac{3E}{3r + R}$   
(c)  $i_s = \frac{3r + R}{3E}$  (d)  $i_s = \frac{E}{3R + 3r}$

34. Which quantities remain unchanged in Kirchoff's two laws? [C.B.-15]

	First law	Second law
(a)	Energy	Charge
(b)	Energy	Momentum
(c)	Charge	Energy
(d)	Momentum	Energy

35. If  $G =$  Galvanometer resistance and  $S =$  Shunt then shunt coefficient is — [B.B.-16]

- (a)  $\frac{S}{G+S}$                       (b)  $\frac{G+S}{S}$   
 (c)  $\frac{G}{G+S}$                       (d)  $\frac{G+S}{G}$

36. Meter Bridge works according to which principle?

- (a) Ampere's law  
 (b) Wheatstone bridge principle  
 (c) Fermat's principle  
 (d) Kirchoff's law

37. In the left gap of a meter bridge there is a  $2 \Omega$  resistance and in the right gap, there is an unknown resistance. If balance point is found at 40 cm distance then determine the unknown resistance.

- (a)  $1.5 \Omega$                       (b)  $3 \Omega$   
 (c)  $20 \Omega$                       (d)  $80 \Omega$

38. In the left and right gaps of a meter bridge there are  $6 \Omega$  and  $4 \Omega$  resistances. Determine the position of the balance point.

- (a) 4 cm                      (b) 6 cm  
 (c) 40 cm                      (d) 60 cm

39. Resistances of a Wheatstone bridge are respectively  $5 \Omega$ ,  $10 \Omega$ ,  $15 \Omega$  and  $20 \Omega$ . What resistance should be added in the fourth leg so the bridge reaches balanced position?

- (a)  $10 \Omega$  in series                      (b)  $10 \Omega$  in parallel  
 (c)  $12 \Omega$  in series                      (d)  $12 \Omega$  in parallel

40. Meter Bridge works according to— [C.B.-16]

- (a) Law of conservation of momentum  
 (b) Law of conservation of energy  
 (c) Wheatstone Bridge principle  
 (d) Conservation law of electric charge

41. Resistance of a conductor— [J.B.-15]

- i. Increases if temperature increases  
 ii. Increases if length increases  
 iii. Increases if cross-sectional area increases

Which of the following is correct?

- (a) i and ii                      (b) ii and iii  
 (c) i and iii                      (d) i, ii and iii

42. Specific resistance of a wire depends on— [All Board-18]

- i. Length of wire  
 ii. Temperature of wire  
 iii. Component of wire

Which of the following is correct?

- (a) i                      (b) ii  
 (c) ii and iii                      (d) i, ii and iii

43. Heat generated due to electric current—

- i. Proportional to electric current  
 ii. Proportional to resistance  
 iii. Proportional to flow time

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii

44. If two unequal resistances are connected in parallel combination and electric current flows through them—

- i. Different electric current will flow through them  
 ii. Potential difference fro both resistances will be same  
 iii. The resistance of lesser value will produce less heat

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii

45. Works according to Wheatstone bridge principle—

- i. Meter Bridge                      ii. Potentiometer  
 iii. Post office box

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii

46. Specific resistance depends on—

- i. Component  
 ii. Length and cross sectional area  
 iii. Temperature

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii

47. EMF of electric source is—

- i. Expensed energy to bring unit positive charge from lower potential to higher potential.  
 ii. Maximum potential difference between two ends when disconnected  
 iii. Expensed energy to rotate unit positive charge through whole circuit including the source

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii

48. The machine to measure resistance — [Dj.B.-16]

- i. Meter Bridge                      ii. Post Office box  
 iii. Potentiometer

Which of the following is correct?

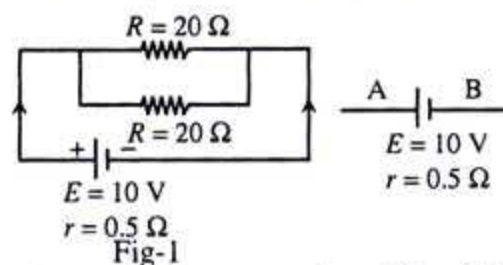
- (a) i                      (b) i and ii  
 (c) ii and iii                      (d) i, ii and iii

49. Shunt is directly used in— [S.B.-16]

- i. Ammeter                      ii. Galvanometer  
 iii. Voltmeter

Which of the following is correct?

- (a) i and ii                      (b) i and iii  
 (c) ii and iii                      (d) i, ii and iii



Check the stem and answer questions 50 and 51: [R.B.-17]

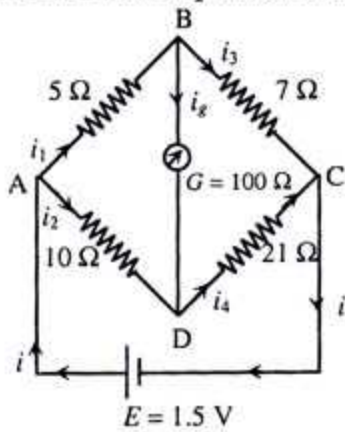
50. Determine main electric current flow in figure 1.

- (a) 0.95 A                      (b) 0.9524 A  
 (c) 1 A                      (d) 1.05 A

51. If the cell AB of fig-2 is connected in parallel combination with the cell of fig-1 then the rate of heat generated by external resistance  $R_p$ —

- (a) 8.523 W                      (b) 9.518 W  
 (c) 9.75 W                      (d) 10 W

Check the stem and answer questions 52 and 53:



52. In closed-circuit ABDA which equation is correct according to Kirchhoff's second law?

- (a)  $5i_1 + 100i_g - 10i_2 = 0$
- (b)  $5i_1 + 100i_g - 10i_2 = 1.5$
- (c)  $5i_1 + 100i_g + 10i_2 = 0$
- (d)  $5i_1 - 100i_g + 10i_2 = 1.5$

53. Determine the resistance to be added with AD so that no electric current will flow through the galvanometer?

- (a) 5 Ω in series
- (b) 5 Ω in parallel
- (c) 15 Ω in series
- (d) 15 Ω in parallel

Check the stem and answer questions 54 and 55:

In a gap of Meter Bridge, there is 4Ω resistance and in another gap there is 6Ω resistance. [Ctg.B.-17]

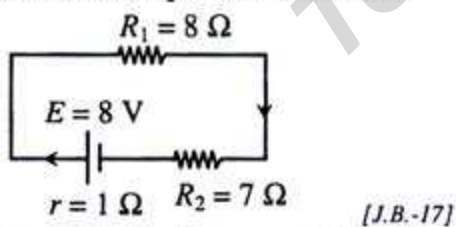
54. Determine the distance of the anti-node point from 6 Ω.

- (a) 10 cm
- (b) 40 cm
- (c) 60 cm
- (d) 90 cm

55. To get the antinode point right at the middle what type of resistance is to be added with 6 Ω resistance?

- (a) 12 Ω in series
- (b) 12 Ω in parallel
- (c) 2 Ω in series
- (d) 2 Ω in parallel

Check the stem and answer questions 56 and 57:



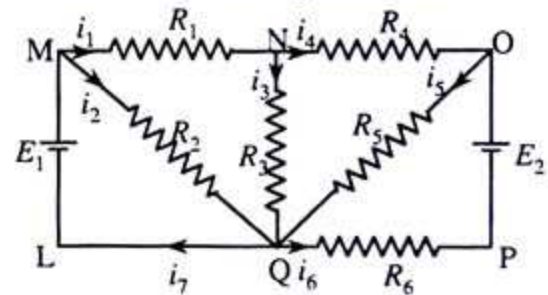
56. What is the main electric current flow?

- (a) 0.42 A
- (b) 0.5 A
- (c) 0.53 A
- (d) 1.7 A

57. How should a resistance be added with  $R_1$  so that the potential difference between two ends of  $R_2$  is 2.94 V?

- (a) 3.04 Ω in series
- (b) 4 Ω in parallel
- (c) 15 Ω in series
- (d) 15 Ω in parallel

Answer 58 and 59 from the figure below.



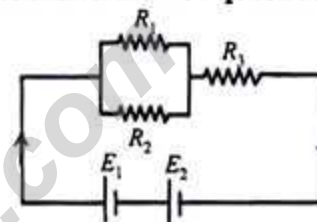
58. Which equation is applicable at point Q?

- (a)  $i_1 + i_2 + i_3 + i_5 - i_4 - i_6 - i_7 = 0$
- (b)  $i_2 + i_3 + i_5 - i_6 - i_7 = 0$
- (c)  $i_2 + i_3 - i_5 + i_6 - i_7 = 0$
- (d)  $i_2 + i_3 - i_5 = i_6 - i_7$

59. Which one is wrong?

- (a)  $i_1 R_1 + i_3 R_3 = E_1$
- (b)  $i_4 R_4 + i_5 R_5 - i_3 R_3 = 0$
- (c)  $-i_4 R_4 + i_3 R_3 + i_6 R_6 = E_2$
- (d)  $i_1 R_1 + i_4 R_4 - i_6 R_6 = E_1 + E_2$

Check the stem and answer questions 60 and 61:



$R_1 = R_2 = R_3 = 10 \Omega$ ,  $E_1 = 2 \text{ V}$ ,  $E_2 = 3 \text{ V}$

[D.B.-15]

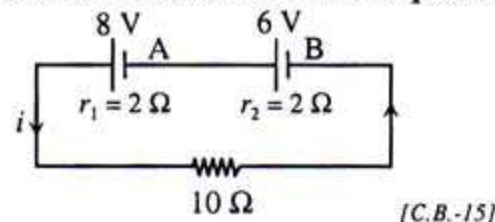
60. Determine electric current of the circuit.

- (a) 0.75 A
- (b) 0.33 A
- (c) 0.30 A
- (d) 0.17 A

61. Which statement is true for the stem?

- (a) If the resistances are connected in parallel then electric current flow will decrease.
- (b) If the cells are connected in opposite order then electric current flow will increase
- (c) If the resistances are connected in series then electric current flow will decrease
- (d) If the resistances are connected in series then electric current will increase

Check the stem and answer the next two questions:



[C.B.-15]

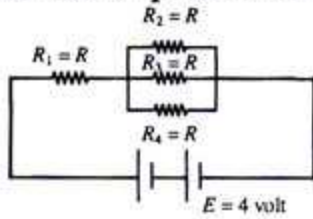
62. What is the electric current of the circuit?

- (a) 0.14 A
- (b) 0.42 A
- (c) 0.57 A
- (d) 1 A

63. If the plates of the cell B are connected in opposite order then which statement is correct?

- (a) Potential difference between two plates of cell will increase
- (b) Potential difference between two plates of cell will decrease
- (c) Potential difference between two plates of cell will be same
- (d) Potential difference between two plates of cell will be zero

Check the stem and answer questions 64-65:



[B.B.-16]

64. Equivalent resistance of circuit-

- (a)  $\frac{3}{4}R$  (b)  $\frac{4}{3}R$   
 (c)  $2R$  (d)  $4R$

(a)

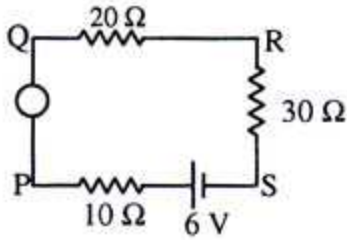
65. If potential difference of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  of the circuit are respectively  $V_1$ ,  $V_2$ ,  $V_3$  and  $V_4$ -

[B.B.-16]

- (a)  $V_1 > V_3$  (b)  $V_2 \neq V_3$   
 (c)  $V_2 < V_4$  (d)  $V_1 = V_4$

(b)

Check the stem and answer questions 66 and 67.



66. If Q and S points are connected with a conductor wire then ammeter reading will be-

- (a) 0.1 A (b) 0.16 A  
 (c) 0.6 A (d) 1.1 A

(d)

67. If Q and S are connected with a voltmeter then ammeter reading will be-

- (a) 0.1 A (b) 0.16 A  
 (c) 0.6 A (d) 1.1 A

(c)

Answer questions 68 and 69 based on the information above:

Resistance of an electric bulb is  $400 \Omega$ . It is connected with a 200 V electric line. Per unit electricity costs 5.00 taka.

68. Determine the electric current passing through the bulb?

- (a) 0.2 A (b) 0.5 A  
 (c) 2 A (d) 5 A

(a)

69. If the bulb is used for ten hours then what is the cost of electricity?

- (a) 0.50 taka (b) 5 taka  
 (c) 10 taka (d) 500 taka

(b)