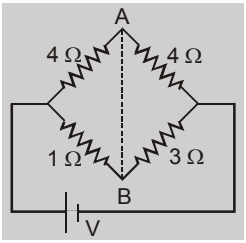
AIPMT 2006

1. In the circuit shown, if a conducting wire is connected between points A and B, the current in this wire will :–



(1) flow from A to B
(2) flow in the direction which will be decided by the value of V
(3) be zero
(4) flow from B to A

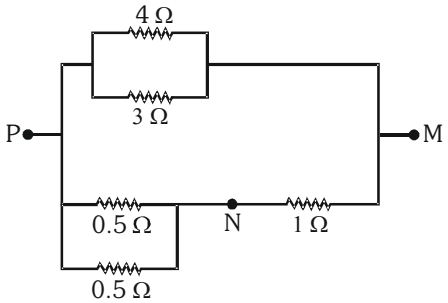
AIPMT 2007

2. The resistance of an ammeter is 13 Ω and its scale is graduated for currents upto 100 A. After an additional shunt is connected to this ammeter it becomes possible to measure currents upto 750 amperes by this meter. The value of shunt-resistance is :–

(1) 2 kΩ (2) 20 Ω (3) 2 Ω (4) 0.2 Ω

AIPMT 2008

3. In the circuit shown, the current through the 4 Ω resistor is 1 A when the points P and M are connected to a d.c. voltage source. The potential difference between the points M and N is :-

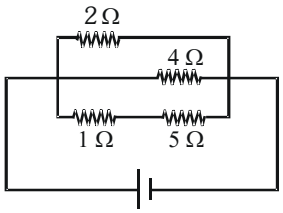


(1) 0.5 volts (2) 3.2 volts
(3) 1.5 volts (4)1.0 volt

4. A galvanometer of resistance 50 Ω is connected to a battery of 3 V alongwith a resistance of 2950 Ω in series. A full scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions, the resistance in series should be :-

(1) 6050 Ω (2) 4450 Ω
(3) 5050 Ω (4) 5550 Ω

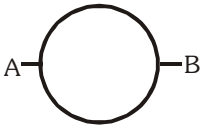
5. A current of 3 amperes flows through the 2 Ω resistor shown in the circuit. The power dissipated in the 5 Ω resistor is :-



(1) 1 watt (2) 5 watts
(3) 4 watts (4) 2 watts

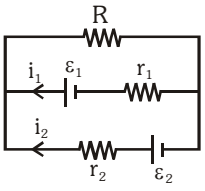
AIPMT 2009

6. A wire of resistance 12 ohms per meter is bent to form a complete of circle of radius 10 cm. The resistance between its two diametrically opposite points, A and B as shown in the figure, is :-



(1) 6 Ω (2) 0.6π Ω
(3) 3 Ω (4) 6π Ω

7. See the electrical circuit shown in this figure. Which of the following equations is the correct equation for it ?



(1) $\varepsilon_1 - (i_1 + i_2)R + i_1r_1 = 0$
(2) $\varepsilon_1 - (i_1 + i_2)R - i_1r_1 = 0$
(3) $\varepsilon_2 - i_2r_2 - \varepsilon_1 - i_1r_1 = 0$
(4) $-\varepsilon_2 - (i_1 + i_2)R + i_2r_2 = 0$

8. A galvanometer having a coil resistance of 60 Ω shows full scale deflection when a current of 1.0 A passes through it. It can be converted into an ammeter to read currents upto 5.0 A by :-

(1) putting in parallel a resistance of 15 Ω

(2) putting in parallel a resistance of 240 Ω

(3) putting in series a resistance of 15 Ω

(4) putting in series a resistance of 240 Ω

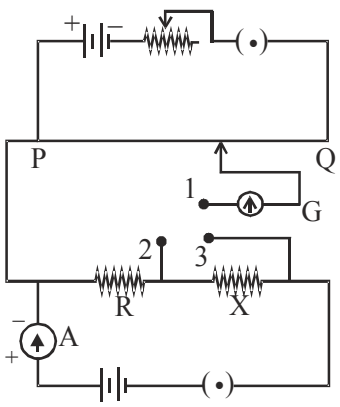
9. A student measures the terminal potential difference (V) of a cell (of emf ε and internal resistance r) as a function of the current (I) flowing through it. The slope and intercept of the graph between V and I, then respectively, are :-

(1) –ε and r (2) ε and –r

(3) –r and ε (4) r and –ε

AIPMT (Pre) 2010

10. A potentiometer circuit is set up as shown. The potential gradient, across the potentiometer wire, is k volts/cm and the ammeter, present in the circuit, reads 1.0 A when two way key is switched off. The balance points, when the key between the terminals (i) 1 and 2 (ii) 1 and 3, is plugged in, are found to be at lengths ℓ_1 cm and ℓ_2 cm respectively. The magnitudes, of the resistors R and X, (in ohms), are then, equal to respectively :-



(1) $k\ell_1$ and $k\ell_2$

(2) $k(\ell_2 - \ell_1)$ and $k\ell_2$

(3) $k\ell_1$ and $k(\ell_2 - \ell_1)$

(4) $k(\ell_2 - \ell_1)$ and $k\ell_1$

11. A galvanometer has a coil of resistance 100 ohms and gives full scale deflection for 30 mA current. If it is to work as a voltmeter of 30 volt range, the resistance required to be added will be :-

(1) 1000 Ω (2) 900 Ω (3) 1800 Ω (4) 500 Ω

12. Consider the following two statements :

(A) Kirchhoff's junction law follows from the conservation of charge.

(B) Kirchhoff's loop law follows from the conservation of energy.

Which of the following is correct ?

(1) Both (A) and (B) are correct

(2) Both (A) and (B) are wrong

(3) (A) is correct and (B) is wrong

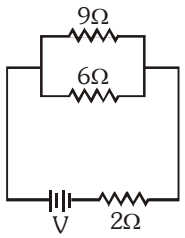
(4) (A) is wrong and (B) is correct.

AIPMT (Pre) 2011

13. A current of 2 A flows through a 2 Ω resistor when connected across a battery. The same battery supplies a current of 0.5 A when connected across a 9 Ω resistor The internal resistance of the battery is :-

(1) 0.5 Ω (2) 1/3 Ω (3) 1/4 Ω (4) 1 Ω

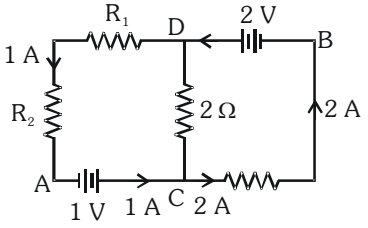
14. If power dissipated in the 9 Ω resistor in the circuit shown is 36 Watt, the potential difference across the 2 Ω resistor is :-



(1) 4 V (2) 8 V (3) 10 V (4) 2 V

AIPMT (Mains) 2011

15. In the circuit shown in the figure, if the potential at point A is taken to be zero, the potential at point B is :-



(1) +1 V (2) –1 V (3) +2V (4) –2 V

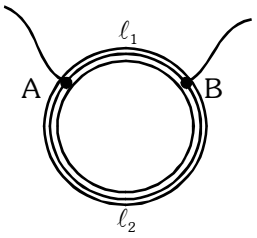
16. A galvanometer of resistance, G, is shunted by a resistance S. To keep the main current in the circuit unchanged, the resistance to be put in series with the galvanometer is :-

(1) $\frac{G}{(S+G)}$ (2) $\frac{S^2}{(S+G)}$

(3) $\frac{SG}{(S+G)}$ (4) $\frac{G^2}{(S+G)}$

AIPMT (Pre) 2012

17. A ring is made of a wire having a resistance $R_0 = 12\ \Omega$. Find the points A and B as shown in the figure at which a current carrying conductor should be connected so that the resistance R of the sub circuit between these points is equal to $\frac{8}{3}\Omega$:-



(1) $\frac{\ell_1}{\ell_2} = \frac{3}{8}$

(2) $\frac{\ell_1}{\ell_2} = \frac{1}{2}$

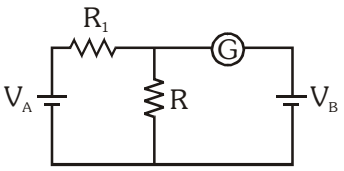
(3) $\frac{\ell_1}{\ell_2} = \frac{5}{8}$

(4) $\frac{\ell_1}{\ell_2} = \frac{1}{3}$

18. If voltage across a bulb rated 220 volts 100 watts drops by 2.5% of its rated value, the percentage of the rated value by which the power would decrease is :-

(1) 5% (2) 10% (3) 20% (4) 2.5%

19. In the circuit shown the cells A and B have negligible resistances. For $V_A = 12$ V, $R_1 = 500\ \Omega$ and $R = 100\ \Omega$ the galvanometer (G) shows no deflection.The value of V_B is :-



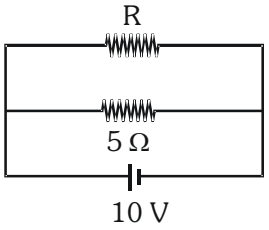
(1) 12 V (2) 6 V (3) 4 V (4) 2 V

20. A milivoltmeter of 25 milivolts range is to be converted into an ammeter of 25 amperes range. The value (in ohms) of necessary shunt will be :

(1) 1 (2) 0.05 (3) 0.001 (4) 0.01

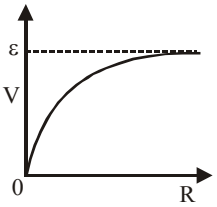
AIPMT (Mains) 2012

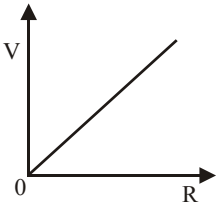
21. The power dissipated in the circuit shown in the figure is 30 watts. The value of R is :-

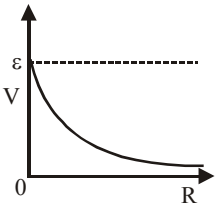


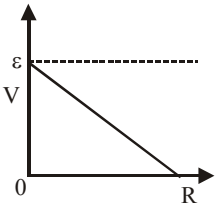
(1) 10 Ω (2) 30 Ω (3) 20 Ω (4) 15 Ω

22. A cell having an emf ε and internal resistance r is connected across a variable external resistance R. As the resistance R is increased, the plot of potential difference V across R is given by :-

(1)


(2)


(3)


(4)


NEET-UG 2013

23. A wire of resistance 4 Ω is stretched to twice its original length. The resistance of the stretched wire would be :-

(1) 16 Ω (2) 2 Ω (3) 4 Ω (4) 8 Ω

24. The internal resistance of a 2.1 V cell which gives a current of 0.2 A through a resistance of 10 Ω is :-

(1) 1.0 Ω (2) 0.2 Ω (3) 0.5 Ω (4) 0.8 Ω

25. The resistances of the four arms P,Q, R and S in a Wheatstone bridge are 10 ohms, 30 ohms, 30 ohms and 90 ohms, respectively. The e.m.f. and internal resistance of the cell are 7 volts and 5 ohms respectively. If the galvanometer resistance is 50 ohms, the current drawn from the cell will be :-

(1) 2.0 A (2) 1.0 A

(3) 0.2 A (4) 0.1 A

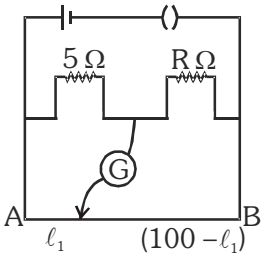
AIPMT 2014

26. Two cities are 150 km apart. Electric power is sent from one city to another city through copper wires. The fall of potential per km is 8 volts and the average resistance per km is 0.5 Ω. the power loss in the wires is :-

(1) 19.2 W (2) 19.2 kW

(3) 19.2 J (4) 12.2 kW

27. The resistance in the two arms of a meter bridge are 5 Ω and R Ω, respectively. When the resistance R is shunted with an equal resistance, the new balance point is at 1.6 ℓ_1. The resistance 'R' is :-



(1) 10 Ω (2) 15 Ω (3) 20 Ω (4) 25 Ω

28. A potentiometer circuit has been set up for finding the internal resistance of a given cell. The main battery, used across the potentiometer wire, has an emf of 2.0 V and a negligible internal resistance. The potentiometer wire itself is 4m long, When a resistance R, connected across the given cell, has values of,

(i) infinity (ii) 9.5 Ω

The balancing lengths on the potentiometer wire are found to be 3 m and 2.85 m respectively. The value of internal resistance of the cell is :-

(1) 0.25 Ω (2) 0.95 Ω

(3) 0.5 Ω (4) 0.75 Ω

29. In an ammeter 0.2% of main current passes through the galvanometer. If resistance of galvanometer is G, then resistance of ammeter will be :-

(1) $\frac{1}{499}$G (2) $\frac{499}{500}$G

(3) $\frac{1}{500}$G (4) $\frac{500}{499}$G

Re-AIPMT 2015

30. A potentiometer wire of length L and resistance r is connected in series with a battery of e.m.f. E_0 and a resistance r_1. An unknown e.m.f. E is balanced at a length ℓ of the potentiometer wire. The e.m.f. E will be given by :

(1) $\frac{LE_0 r}{(r+r_1)\ell}$ (2) $\frac{L E_0 r}{\ell r_1}$

(3) $\frac{E_0 r}{(r+r_1)}\cdot\frac{\ell}{L}$ (4) $\frac{E_0\ell}{L}$

31. Two metal wires of identical dimensions are connected in series. If σ_1 and σ_2 are the conductivities of the metal wires respectively, the effective conductivity of the combination is :-

(1) $\frac{\sigma_1\sigma_2}{\sigma_1+\sigma_2}$ (2) $\frac{2\sigma_1\sigma_2}{\sigma_1+\sigma_2}$

(3) $\frac{\sigma_1+\sigma_2}{2\sigma_1\sigma_2}$ (4) $\frac{\sigma_1+\sigma_2}{\sigma_1\sigma_2}$

32. A circuit contains an ammeter, a battery of 30 V and a resistance 40.8 ohm all connected in series. If the ammeter has a coil of resistance 480 ohm and a shunt of 20 ohm, the reading in the ammeter will be :-

(1) 1 A (2) 0.5 A

(3) 0.25 A (4) 2 A

AIPMT - 2015

33. Across a metallic conductor of non-uniform cross section a constant potential difference is applied. The quantity which remains constant along the conductor is :

(1) current

(2) drift velocity

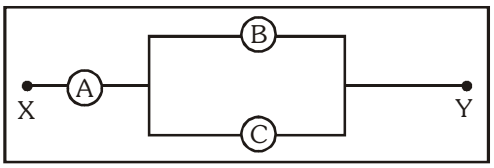
(3) electric field

(4) current density

34. A potentiometer wire has length 4 m and resistance 8Ω. The resistance that must be connected in series with the wire and an accumulator of e.m.f. 2V, so as to get a potential gradient 1 mV per cm on the wire is :

(1) 40 Ω (2) 44 Ω (3) 48 Ω (4) 32 Ω

35. A, B and C are voltmeters of resistance R, 1.5 R and 3R respectively as shown in the figure. When some potential difference is applied between X and Y, the voltmeter readings are V_A, V_B and V_C respectively. Then :



(1) $V_A \neq V_B = V_C$ (2) $V_A = V_B \neq V_C$

(3) $V_A \neq V_B \neq V_C$ (4) $V_A = V_B = V_C$

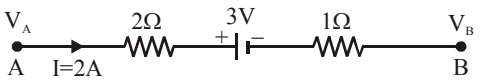
NEET-I 2016

36. A potentiometer wire is 100 cm long and a constant potential difference is maintained across it. Two cells are connected in series first to support one another and then in opposite direction. The balance points are obtained at 50 cm and 10 cm from the positive end of the wire in the two cases. The ratio of emf's is :-

(1) 5 : 1 (2) 5 : 4 (3) 3 : 4 (4) 3 : 2

NEET-II 2016

37. The potential difference ($V_A - V_B$) between the points A and B in the given figure is :-



(1) + 6 V (2) + 9 V

(3) – 3 V (4) + 3 V

38. A filament bulb (500 W, 100 V) is to be used in a 230 V main supply. When a resistance R is connected in series, it works perfectly and the bulb consumes 500 W. The value of R is :-

(1) 26 Ω (2) 13 Ω

(3) 230 Ω (4) 46 Ω

NEET(UG)-2017

39. The resistance of a wire is 'R' ohm. If it is melted and stretched to 'n' times its original length, its new resistance will be :-

(1) $\frac{R}{n}$ (2) n^2R (3) $\frac{R}{n^2}$ (4) nR

40. A potentiometer is an accurate and versatile device to make electrical measurements of E.M.F. because the method involves :-

(1) Potential gradients

(2) A condition of no current flow through the galvanometer

(3) A combination of cells, galvanometer and resistances

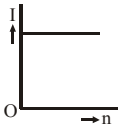
(4) Cells

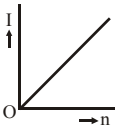
NEET(UG)-2018

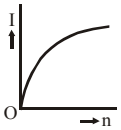
41. A set of 'n' equal resistors, of value 'R' each, are connected in series to a battery of emf 'E' and internal resistance 'R'. The current drawn is I. Now, the 'n' resistors are connected in parallel to the same battery. Then the current drawn from battery becomes 10 I. The value of 'n' is :-

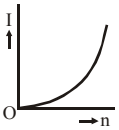
(1) 10 (2) 11 (3) 20 (4) 9

42. A battery consists of a variable number 'n' of identical cells (having internal resistance 'r' each) which are connected in series. The terminals of the battery are short-circuited and the current I is measured. Which of the graphs shows the correct relationship between I and n ?

(1) 

(2) 

(3) 

(4) 

43. A carbon resistor (47 ± 4.7) kΩ is to be marked with rings of different colours for its identification. The colour code sequence will be :-

(1) Violet – Yellow – Orange – Silver

(2) Yellow – Violet – Orange – Silver

(3) Yellow – Green – Violet – Gold

(4) Green – Orange – Violet – Gold

44. Current sensitivity of a moving coil galvanometer is 5 div/mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20 div/V. The resistance of the galvanometer is

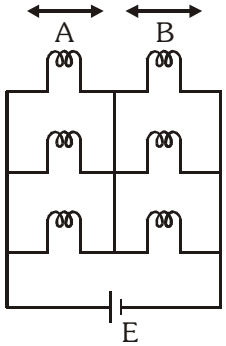
(1) 40 Ω (2) 25 Ω

(3) 250 Ω (4) 500 Ω

NEET(UG)-2019

45. Six similar bulbs are connected as shown in the figure with a DC source of emf E, and zero internal resistance.

The ratio of power consumption by the bulbs when (i) all are glowing and (ii) in the situation when two from section A and one from section B are glowing, will be :



(1) 4 : 9 (2) 9 : 4

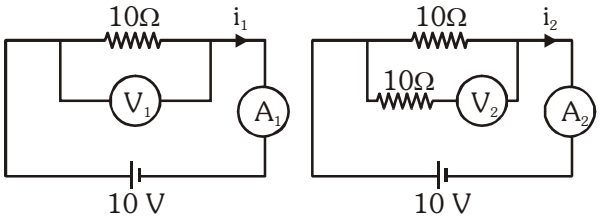
(3) 1 : 2 (4) 2 : 1

46. Which of the following acts as a circuit protection device?

(1) conductor (2) inductor

(3) switch (4) fuse

47. In the circuits shown below, the readings of the voltmeters and the ammeters will be :



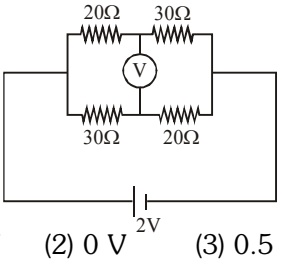
Circuit 1 Circuit 2

(1) $V_2 > V_1$ and $i_1 = i_2$ (2) $V_1 = V_2$ and $i_1 > i_2$

(3) $V_1 = V_2$ and $i_1 = i_2$ (4) $V_2 > V_1$ and $i_1 > i_2$

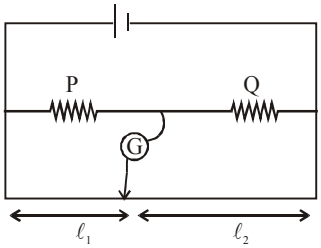
NEET(UG)-2019 (Odisha)

48. The reading of an ideal voltmer in the circuit shown is :



(1) 0.6 V (2) 0 V (3) 0.5 V (4) 0.4 V

49. The metre bridge shown is in balanced position with $\frac{P}{Q}=\frac{\ell_1}{\ell_2}$. If we now interchange the positions of galvanometer and cell, will the bridge work ? If yes, what will be balance condition ?



(1) yes, $\frac{P}{Q}=\frac{\ell_2-\ell_1}{\ell_2+\ell_1}$ (2) no, no null point

(3) yes, $\frac{P}{Q}=\frac{\ell_2}{\ell_1}$ (4) yes, $\frac{P}{Q}=\frac{\ell_1}{\ell_2}$

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**4**	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**3**	**3**	**2**	**1**	**2**	**3**	**1**
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	**4**	**2**	**1**	**4**	**3**	**1**	**1**	**1**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	**2**	**2**	**1**	**4**	**4**	**4**	**2**	**1**	**2**	**2**	**1**	**1**	**2**	**3**	**2**
Que.	46	47	48	49											
Ans.	**4**	**3**	**4**	**4**											