CURRENT ELECTRICITY

CBSE BOARD'S IMPORTANT QUESTIONS OF 1 & 2 MARKS

Questions marks 1

1. If the length of a wore conductor is doubled by stretching it, keeping the p.d. across it constant, by what factor does the drift speed of electrons charge? [1]

2. If the temperature of a good conductor increases, how dies the relaxation time of electron in the conductor charge? [1]

3. What is the effect of heating of a conductor on the drift velocity of free electrons? [1]

4. A wire of resistivity ρ is stretched to double its length. What will be its new resistivity? [1]

5. A copper wire of resistivity ρ is stretched to reduce its diameter to half of its previous value. What will be its new resistivity? [1]

6. Why potentiometer is preferred over voltmeter for measuring e.m.f.? [1]

7. If a wire of resistivity 'ρ' is stretched to thrice its initial length, what will be its new resistivity? [1]

8. The sequence of bands marked on a carbon resistor are : Red, Red, Red, silver. Write the value of resistance with tolerance. [1]

9. A carbon resistor of 74kΩ is to be marked with rings of different colures for its identification. Write the sequence of colures. [1]

10. The metallic conductor is at a temperature θ_1. The temperature of the metallic conductor is increased to θ_2. How will the product of its resistivity and conductivity charge? [1]

11. Two wire A and B of the same metal, have the same area of cross-section and have their lengths in the ratio 2:1. What will be the ratio of currents flowing through the repetitively when the same potential difference is applied across length of each of them? [1]

12. If p.d. V applied across a conductor is increased to 2V, how will the drift velocity of the electrons charge. [1]

13. A uniform wire of resistance 20Ω is cut into two equal parts. These parts are now connected in parallel. What will be the resistance of the combination? [1]

14. A student obtains resistances of 3,4,12 and 16 ohms using only two metallic resistance wires either separately or joined together. What is the value of resistance of each of these wire? [1]

15. Specific resistance of copper, silver and the constantan are $1.18 \times 10^{-6}\Omega$ cm, $1 \times 10^{-6}\Omega$ cm and $48 \times 10^{-6}\Omega$ cm respectively. Which is the best electrical conductor and why? [1]

16. How is the electrical conductivity of an electrolyte affected by increase of temperature? [1]

17. How can you make a potentiometer of given wire more sensitive using a resistance box? [1]

18. State the condition in which terminal voltage across a secondary cell is equal to its e.m.f. [1]

19 Give reasons why the electrical conductance of electrolytes is less than that of metals. [1]

20. A cell of e.m.f. 2V and internal resistance 0.1Ω is connected to a 3.9Ω external resistance. What will be the p.d. across the tolerance. [1]

Questions marks 2

1. Define specific resistance and express it in mass, charge, number density and relaxation time. [2]

2. A set of n identical resistors, each of resistance R ohm, when connected in series have an effective resistance X ohm, and when the resistors are connected in parallel, their effective resistance is Y ohm. Find the relation between R,X and Y. [2]

3. Define the term 'electrical resistivity' of a material and temperature, which ones controls the resistivity value of a conductor? [2]

4. Calculate the electrical conductivity of the material of a conductor of length 3m, area of cross-section 0.02 mm^2 having a resistance of 2 ohm. [2]

5. A 10Ω think wire is stretched so that its length become three times. Assuming that there is no charge in its density on stretching, calculate the resistance of new wire. [2]

6. A voltage of 30V is applied across a colour coded carbon resistor with first, second third ring of blue, black and yellow colour. What is the current flowing through the resistor? [2]

7. How does the drift velocity in a metallic conductor charge, if the length of the conductor is doubled by stretching it, keeping the applied potential difference contestants? [2]

8. state Kirchhoff's laws for an electrical network? [2]

9. Draw a circuit diagram of a metre bridge to determine the resistance of a wire. Give the formula used. [2]

10. Name any one material having a small value of temperature coefficients of resistance. Write one use of this material. [2]

11. Explain the principle on which the working of a potentiometer is based. Why is the use of a potentiometer preferred over that of a voltmeter for measurement of e.m.f of a cell? [2]

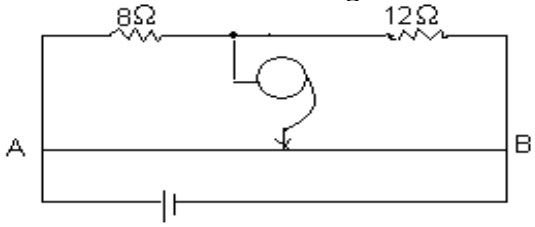
13. A metallic wire of length 1m is stretched to double its length. Calculate the ratio of its initial and final resistance assuming that is no charge in its density on stretching. [2]

14. Three identical cells, each of e.m.f. 2V and internal resistance of 0.2 ohm are connected in series to an external resistor of 7.4ohm. Calculate the current in the circuit. [2]

15. What is the terminal p.d. of cell? Can its value be greater than the e.m.f. of cell? Explain. [2]

Questions marks 3

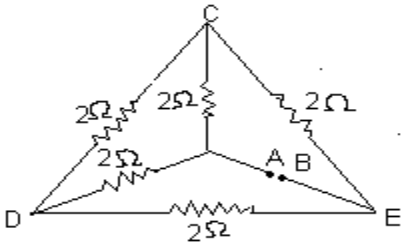
16. Why is a potentiometer preferred over a voltmeter to measure e.m.f. of a cell? The Potentiometer wire AB shown in the figure is 400cm long. Where should the free end of the galvanometer be connected on AB so that the galvanometer shows zero deflection?[3]



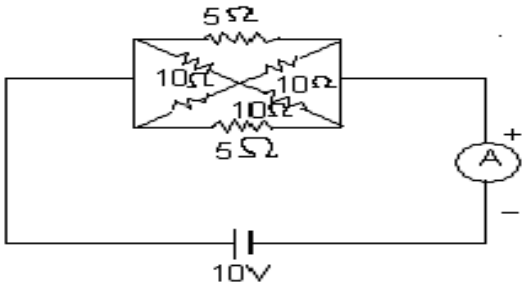
17. A potential difference of 2 volt is applied between the points a and B as shown in the network drawn in the figure .Calculate: [3]

(i) Equivalent resistance of the network across the point A and B.

(ii) The magnitudes of current flowing in the arms AFCEB and AFDEB.



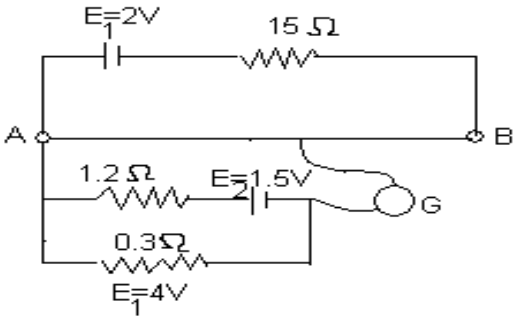
18. Calculate the current shown by the ammeter A in the circuit diagram given below: [3]



19. AB is one meter long uniform wire of 10Ω resistance. The other data are shown in the circuit diagram given below. Calculate: [3]

(i) Potential gradient shown no deflection.

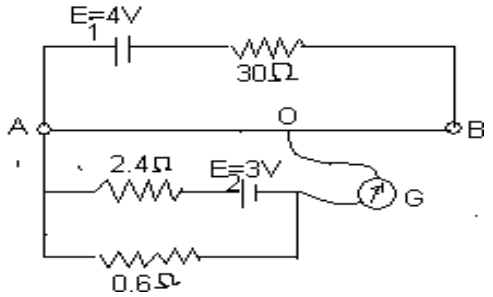
(ii)Length *AO* of the wire, when the galvanometer shown no deflection.



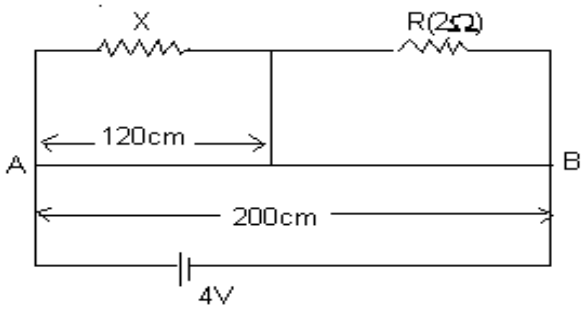
20. AB is 2m long uniform wire of 20 Ω resistance. The other data are as shown in

the circuit diagram given blow: Calculate:- [3]

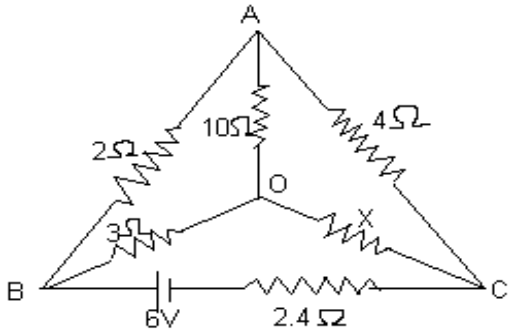
(i)potential gradient along AB, and (ii) length AO of the wire, when the galvanometer shown no deflection.



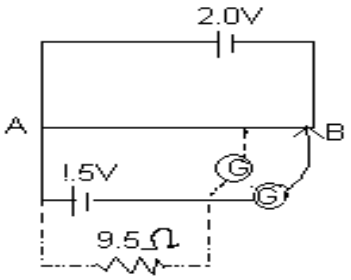
21. Find the value of unknown resistance X and the current from by the circuit from the battery, if no current flows thought the galvanometer. Assume the resistance per unit length of the write AB to be 0.01Ω/cm. [3]



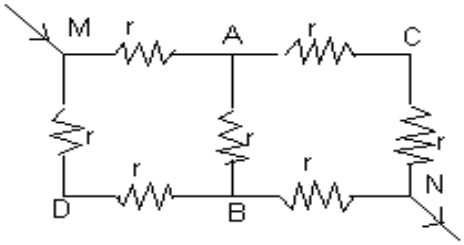
22. Find the value of the unknown resistance X, in the following circuit flows though the section AO. Also calculate the current by the circuit from the emf 6V and negligible internal resistance. [3]



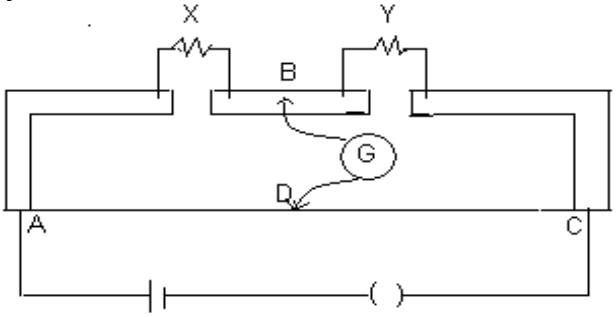
23. Figure shows a 2.0V potentiometer used for the determination of internal resistance of a 1.5V cell. The balance point of the cell in open circuit is 76.3cm. When a resistance of 9.5Ω is used in the external circuit of the cell, the balance point shifts to 64.8cm length of the balance potentiometer wire. Determine the internal resistance of the cell. [3]



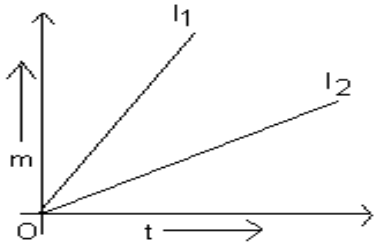
24. Calculate the equivalent resistance between the points M and N. [3]



25. The above figure shows a bridge consisting of two resistance X and Y together in parallel with a meter long constantan wire pf uniform cross-section. With on a movable contact D, one can change the ratio of resistances of the two segment of the wire, until a sensitive galvanometer G connected across B and D, shows on deflection. The null point is found to be at a distance of 33.7cm from the end A. The resistance Y is shunted by a resistance Y of 12.0Ω and the null point is found to shift by a distance of 18.2cm. determine the resistance of X and Y. [3]



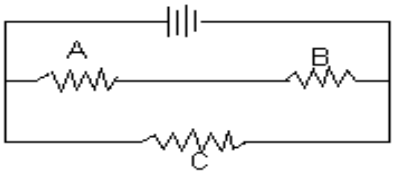
26. Figure shows mass deposited (*m*) vs time (*t*) graph of a voltammeter for currents l_1 and l_2. Is l_1 more than, less than or equal to l_2? [3]



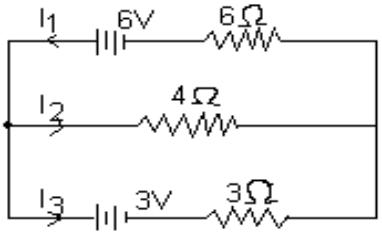
27. In the arrangement of 3 equal resistor, *A,B* and *C* shown here, power dissipation in th resistor marked A is *P*. Find the following:- [3]

(a) Power dissipation in the resistor marked *B.*

(b) Power dissipation in the resistor marked C.



28. In the following network, show that the total power dissipation in the resistors is equal to the total power supplied by the sources. [3]



29. Use kirsch off Laws to the following electrical network and answer the questions given blew: [3]

(a) In which of the resistors will the power dissipation be maximum and how much?

(b) How much power does the 6V battery supply?