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Date: 14-05-2021

Class: 10th Genesis

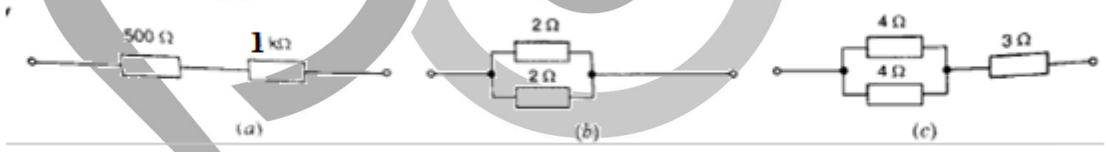
Subject: Science

Test code: SEP04(21041304)

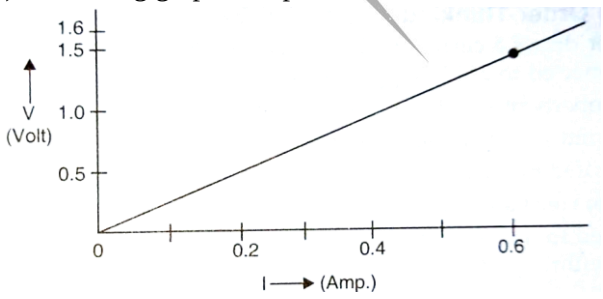
Physics

M. Marks: 20

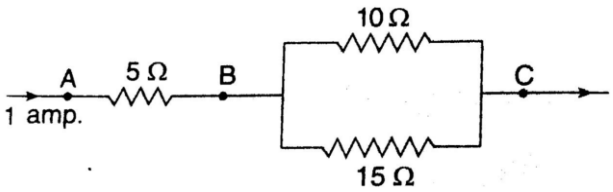
1. A resistance of 20 ohms has a current of 2 amperes flowing in it. What potential difference is there between its ends? (1 marks)
2. What is nichrome? State its one use. (1 marks)
3. Two resistances X and Y are connected turn by turn (i) in parallel and (ii) in series. In which case the resultant resistance will be less than either of individual resistance. (1 marks)
4. If 3 resistances of 3 ohm each are connected in parallel, what will be their total resistance? (1 marks)
5. What possible values of resultant resistance one can get by combining two resistances, one of value 2 ohm and the other 6 ohm? (1 marks)
6. What is Ohm's law? Explain how it is used to define the unit of resistance. (2 marks)
7. Calculate the combined resistance in each case: (2 marks)



8. An electric circuit consisting of a 0.5 m long nichrome wire XY, an ammeter, a voltmeter, four cells of 15 V each and a plug key was set up. (3 marks)
   (i) Draw a diagram of this electric circuit to study the relation between the potential difference maintained between the points 'X' and 'Y' and the electric current flowing through XY.
   (ii) Following graph was plotted between V and I values:



   What would be the values of $\frac{V}{I}$ ratios when the potential difference is 0.8 V, 1.2 V and 1.6 V respectively?
   (iii) What is the resistance of the wire?
9. Three resistors are connected as shown in the diagram.



Through the resistor 5 ohm, a current of 1 ampere is flowing.

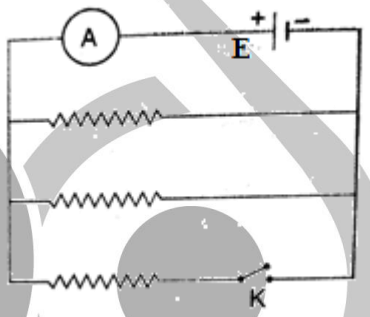
(i) What is the current through the other two resistors?

(ii) What is the p.d. across AB and across AC?

(iii) What is the total resistance?

10. (a) Explain with the help of a labelled circuit diagram, how you will find the resistance of a combination of three resistors of resistance R_1, R_2 and R_3 joined in parallel. (5 marks)

(b) In the diagram shown below, the cell and the ammeter both have negligible resistance. The resistors are identical.



With the switch K open, the ammeter reads 0.6 A. What will be the ammeter reading when the switch is closed?