

Ankit Gupta Classes

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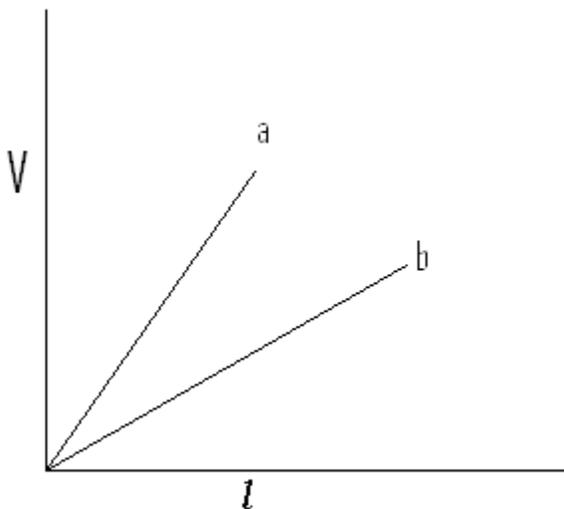
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UNIT—02

CURRENT ELECTRICITY

One mark questions

- Q1. Under what conditions will Terminal potential difference of a cell be greater than its EMF?
- Q2. A wire of resistivity ρ is stretched to twice its length. What will be its new resistivity?
- Q3. Give the colour coding for a carbon resistor of 1 ohm having 5% tolerance?
- Q4. If the temperature of a metallic conductor increases how does the relaxation time of electrons in conductor change?
- Q5. Write the dimensional formula of mobility of electrons.
- Q6. Manganin is used in making standard resistance. Give two reasons.
- Q7. How does the drift velocity of electrons in a metallic conductor change, if the length of the conductor is doubled by stretching it, keeping the applied potential difference constant?
- Q8. The variation of potential difference V with length l in case of two potentiometers 'a' and 'b' is shown in the graph given below.



Which one of these two will you prefer for comparing EMF of two cells? Give reason.

Q9. Why the terminal Potential is always less than EMF of a cell, while in use?

Q10. The conductivity of a semi conductor increases with the rise of temperature. Give reason.

Two Marks Questions

The More Goals You Set - The More Goals You Get.

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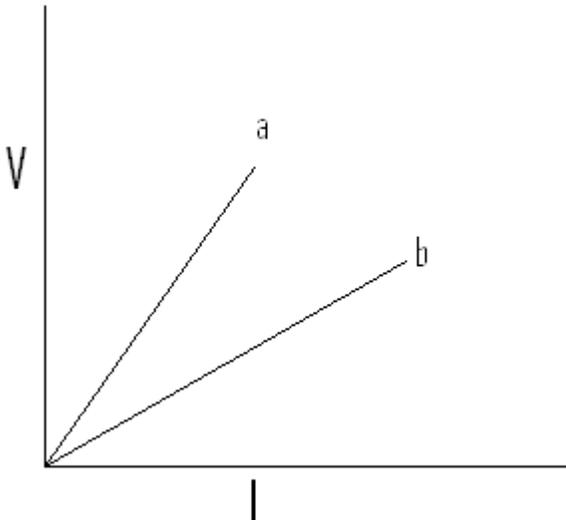
Q11. N number of identical resistors each of resistance R is combined to get the maximum and minimum resistances, what is the ratio of the maximum to minimum resistance.

Q12. Two wires of equal length one of copper and other of manganin have same resistance. Which of the two wires will be thicker? Justify your answer with the help of suitable formula.

Q13. A resistor of 24 ohm resistance is bent in the form of a loop as shown in the figure.

Calculate effective resistance between points A and B?

Q14. V-I graph for metallic wire at two different temperature 'a' and 'b' is shown in fig. Which of the two temperatures is higher and why?



Q15. Explain why the I-V characteristics of a resistor are obtained to deviate from a straight line from higher values of current as shown below:

Three Marks Question-

Q16. Two resistances are in the ratio 1:4 if these are connected in parallel their total resistance becomes 20 ohm. Find the value of each resistance.

Q17. A household circuit has a fuse of 5A rating. Calculate the maximum number of bulbs of rating 60W-220V each which can be connected in the household circuit.

Q18. Calculate current in each branch.

Q19. Two identical cells of EMF E and internal resistance r whether joined in series or in parallel give the same current, when connected to external resistance of 1 ohm. Find internal resistance of each cell.

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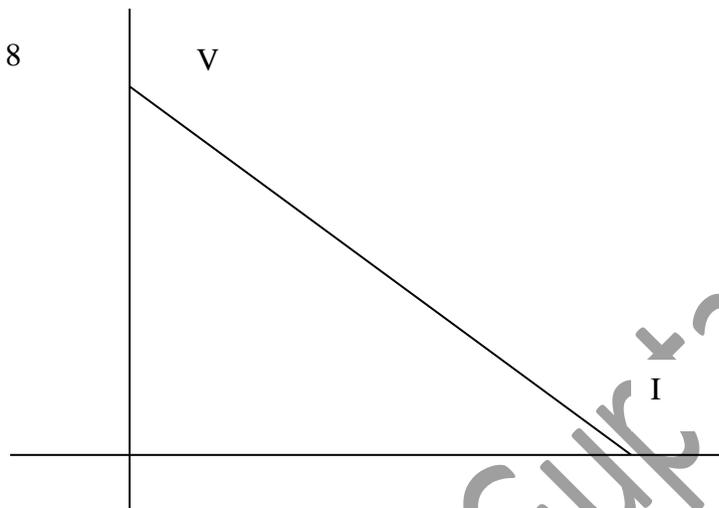


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Q20. 4 cells of identical EMF E , internal resistance r are connected in series to a variable resistor. The following graph shows the variation of terminal voltage of the combination with the current output:

1. What is the EMF of each cell?
2. Calculate the internal resistance of each cell.



ANSWERS-

1. during charging
2. uncharged
3. black, brown, black (gold)
4. decreases
5. $ML^3T^{-4}A^{-1}$
6. Low temp. Coefficient of resistance high Resistivity.
7. drift velocity halved
8. $k_b < k_a$ (k is the potential gradient)
9. T.P. = EMF - Ir
10. Due to increase in carrier density

Two Marks-

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11. $N^2:1$
12. MANGANIN
13. $10/3$ OHM
14. $a > b$
15. temp. increases
slope decreases
ohm law is disobeyed

Three Marks-

16. $R_1 = 25$ ohm
 $R_2 = 100$ ohm
17. no. of bulb = 18
18. $I_1 = 5/2$ A
 $I_2 = 5/8$ A
 $I_3 = 7/8$ A
19. $r = 1$ ohm
20. (1) $E = 1.4$ V
(2) $r = 0.7$ ohm.

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