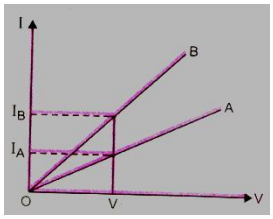
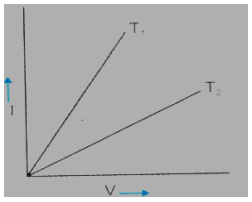
JASWANT MODERN SR. SEC. SCHOOL WORKSHEET (HOLIDAY HOMEWORK) CLASS 10TH PHYSICS

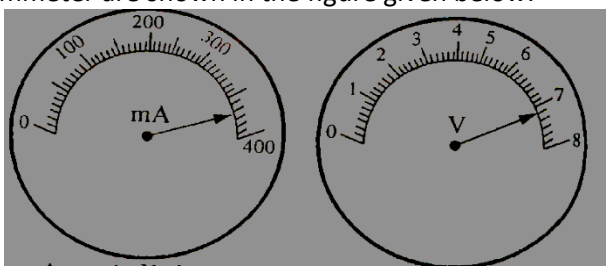
1. Define 1V?
2. If length of a wire is doubled what happens to its resistance?
3. Name a metal which offers higher resistance to the passage of electricity than Copper?
4. Graph between electric current and potential difference across two conductors A and B are as shown in the figure given below; Which of the two conductors has more resistance?



5. V-I graph for metallic wire at two different temperatures T_1 and T_2 are shown in the figure. Which of the two temperature is higher and why ?

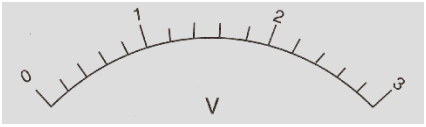


6. Calculate the resistance of an aluminium wire of length 10km and diameter 2.0mm if the resistivity of wire is 2.7 x 10^{-8} ohm meter.
7. Readings of voltmeter and ammeter are shown in the figure given below:



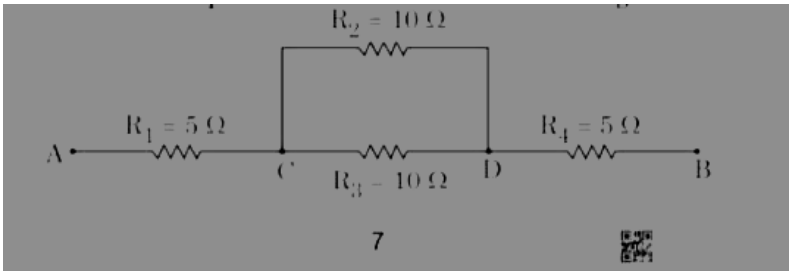
What will be the resistance of the conductor in which these two devices are connected?

8. The least count of the given voltmeter shown below is:

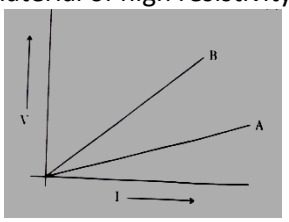


9. Why is the tungsten metal more coiled in the bulb and not installed in a straight form?
10. How many 176Ω resistors (in parallel) are required to carry 5A in 220v line?
11. A piece of wire of resistance 20Ω is drawn out so that its length is increased to twice its original length. Calculate the resistance of the wire in the new situation?
12. Two resistors when connected in parallel give the resultant value of 2Ω; when connected in series the value becomes 9Ω. Calculate the value of each resistance?
13. Show how would you join the three resistors, each of resistance 9Ω so that the equivalent resistance of the combination is : i) 13.5Ω ii) 6Ω?
14. Write the function of voltmeter in an electric circuit?
15. In an electric circuit two resistors of 12Ω each are joined in parallel to a 6V battery find the current drawn from the battery?
16. Find the resistance of two copper rods X and Y of lengths 30cm and 10cm respectively and having radii 2cm and 1cm respectively.
17. Write the mathematical expression for joules law of heating?

18. Three resistors R_1, R_2 and R_3 are connected in parallel and the combination is connected to a battery, an ammeter, a voltmeter and a key. Draw a suitable circuit diagram to show the arrangement of these circuit components along with the direction of current flowing. **[CBSE 2023] {3 Marks}**
    Calculate the equivalent resistance of the following network:

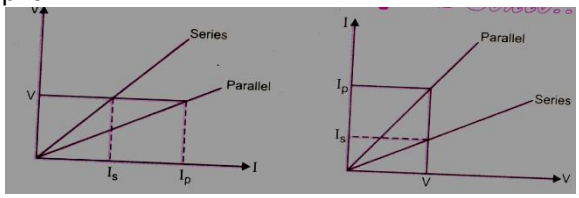


19. Two bulbs rated 100W; 220V and 60W; 220v are connected in parallel to an electric mains of 220v. Find the current drawn by the bulbs from the mains.
20. V-I graph for two conducting wire A and B are as shown. If both wires are of the same length and same diameter, which of the two is made of a material of high resistivity? Give reasons to justify your answer.



21. Compare how an ammeter and voltmeter are connected in a circuit?
22. 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 the individual resistances?
23. State two factors on which electrical energy consumed depends?

24. Two students perform experiments on series and parallel combinations of two given resistors R_1 and R_2 and plot the following V-I graphs:



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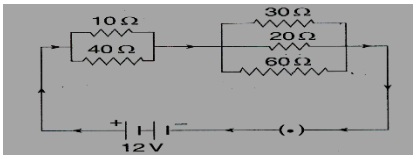
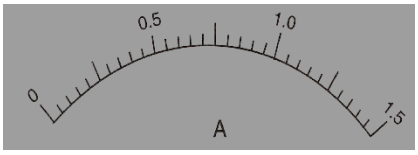
    Which of the graph (are) correctly labeled in terms of the words 'series' and 'parallel' ? Justify your answer.
25. In the circuit diagram given below five resistances of 10 Ω, 40 Ω, 30 Ω, 20 Ω and 60 Ω are connected as shown to a 12V battery calculate total resistance and total current in the circuit.

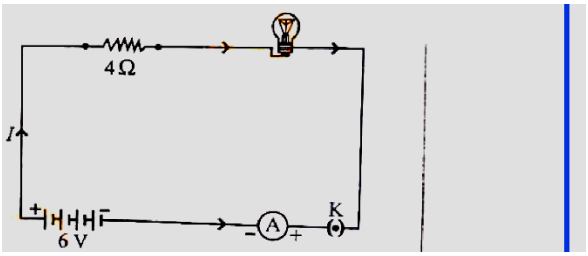


26. A torch bulb is rated 2.5 V and 750 mA. Calculate (i) its power, (ii) its resistance and (iii) the energy consumed if this bulb is lighted for 4 hours?
27. What will be the least count of the ammeter shown below is:

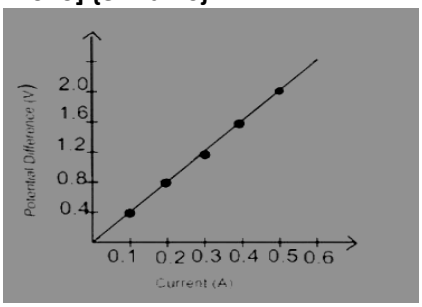


28. Why don't a bird sitting on a wire does not get electric shock?
29. How can three resistors of resistances 2Ω ,3Ω and 6Ω be connected to give a total resistance of 4 ohm?

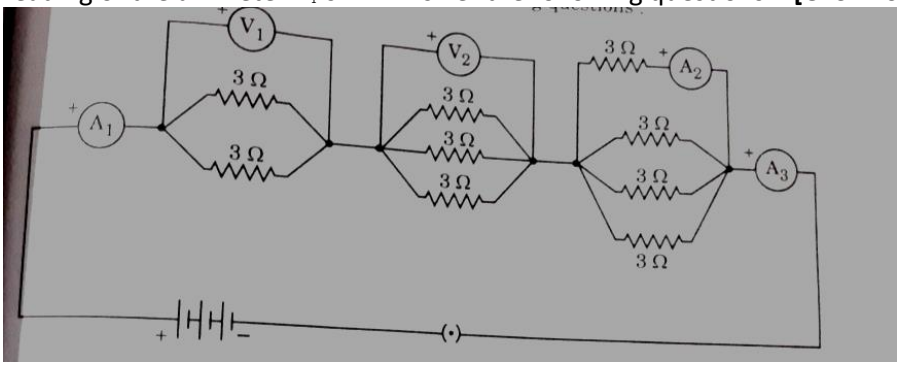
30. A 6Ω resistance wire is doubled up by folding. Calculate the new resistance of the wire?
31. Show with the help of a diagram, how will you connected the three resistors each of resistance 6Ω, so that the combination has resistance of 9 ohm?
32. Write joules law of heating.
33. Two lamps one rated 100W;220V, and the other 60W;220V, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is 220V.
34. With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistance joined in parallel is equivalent to the sum of the reciprocals of the individual resistance?
    An electric lamp of resistance 20Ω is connected to a resistor of 4Ω to a 6V battery as shown in the diagram below:



    Calculate: (a) The total resistance of the circuit (b) The current in the circuit (c) The potential difference across (i) electric lamp (ii) and conductor
35. A current of 500mA flows in a series circuit containing an electric lamp and conductor 10Ω when connected to 6V battery. Find the resistance of the electric lamp?
36. Two bulbs of 100W and 40W are connected in series. The current through the 100W bulb is 1A. find the current through the 40W bulb.
37. Compute the heat generated while transferring 96000coulombs of charge is two hours through a potential difference 40V?
38. A V-I graph for a nichrome wire is given below. What do you infer from this graph? Draw labeled circuit diagram to obtain such a graph**[CBSE 2020] {3 Marks}**



39. Define electric power and write its SI unit.
40. Consider the following electrical circuit diagram in which nine identical resistance of 3Ω each are connected as shown. If the reading of the ammeter A_1 is 1A. Answer the following questions: **[CBSE 2023] {5 Marks}**



a. What is the relationship between readings of A_1 and A_3 ? give reason for your answer.
b. What is the relationship between the readings of A_2 and A_3 ?
c. Determine the readings of the voltmeter V_1