Holiday Homework(2026-2027)

Name: _____

Date: _____/ _05____/ _2026 **Class: XII-A1,A2**

Subject: Physics

Class-XII(Physics)

Instruction-

1.Learn chapter 1,2 and 3 for unit test -1

Answer all the questions based on chapter 1,2 and 3 from the last years CBSE question papers (2022, 2023 , 2024,2025and 2026)

2.Make a flow chart of all the formula from the chapter Electrostatics and current electricity on a separate A4 size sheet for each chapter and then paste sheets in your notebook by using creativity.

3) Prepare a innovative physics project in the grouping of two students as per discussion and allotation in the class.

Investigatory Projects- Physics (2025-26)

As per C.B.S.E. guidelines, all students have to prepare one Investigatory Project carrying 3 marks. All students are therefore, advised to prepare one Investigatory Project on any other topic of their choice based on concept of physics after consulting the teacher during the summer vacation.

4)complete the assignment and M.C.Q. in the assignment notebook.

POINTERS FOR MAKING PROJECT REPORT

The material should be placed and bound in the following order:

1. **Top Sheet of transparent plastic –The top page of your report should carry the following information in printed form or handwritten in neat block letters:**

Name of project
Name of student
Roll no
Date of submission:

2. **Aim of Project**
3. **Apparatus required**

4. **Principle/theory**
5. **construction with labeled diagram,**
6. **Working**
7. **Observations (to be filled later in lab)**
8. **Calculations,**
9. **Result/ Conclusions**
10. **Applications,**
11. **Graphs if any,**
12. **References/bibliography**
13. **Back cover of plastic: may be opaque or transparent**

Note: Complete the practical file and the investigatory project

Assignment : Unit 2

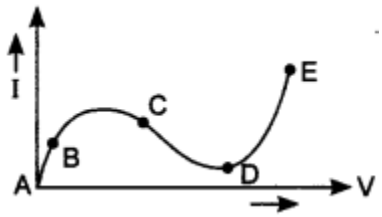
GENERAL INSTRUCTIONS:

A: The numerical are based on application of theory content. Attempt them in your physics notebook as practice assignment.

B: Do all questions in sequence.

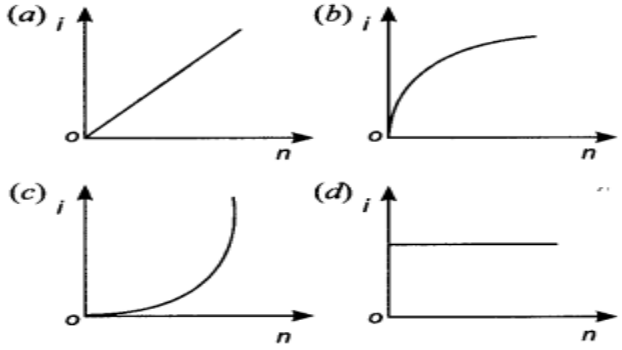
COMPETENCY BASED QUESTIONS

1. From the graph between current I and voltage V shown below, identify the portion corresponding to negative resistance

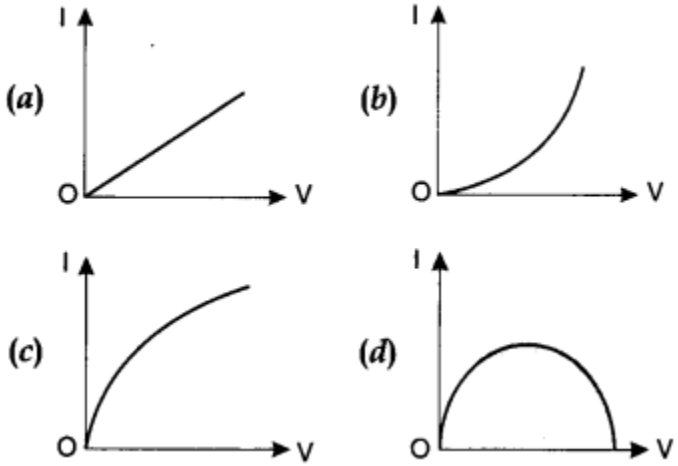


(a) AB
(b) BC
(c) CD
(d) DE

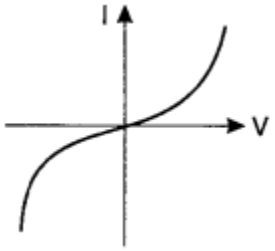
2. A battery consists of a variable number V of identical cells having internal resistances connected in series. The terminals of battery are short circuited and the current i is measured. Which of the graph below shows the relationship between i and n?



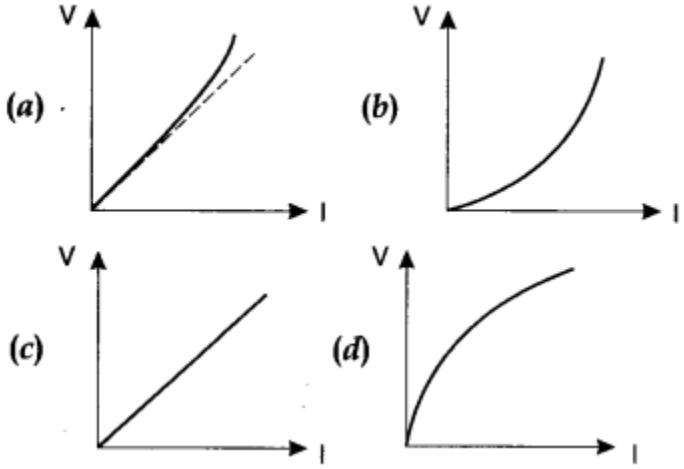
3. A charge is moving across a junction, then
   (a) momentum will be conserved.
   (b) momentum will not be conserved.
   (c) at some places momenturii will be conserved and at some other places momentum will not be conserved.
   (d) none of these.
4. Which of the following I-V graph represents ohmic conductors?



5. The I-V characteristics shown in figure represents

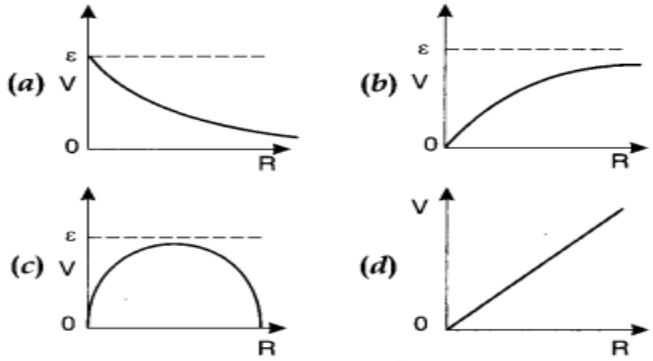


   (a) ohmic conductors
   (b) non-ohmic conductors
   (c) insulators
   (d) superconductors
6. Which of the following is correct for V-I graph of a good conductor?



7. The resistivity of alloy manganin is
   (a) Nearly independent of temperature
   (b) Increases rapidly with increase in temperature
   (c) Decreases with increase in temperature
   (d) Increases rapidly with decrease in temperature

8. An electric heater is connected to the voltage supply. After few seconds, current gets its steady value then its initial current will be
   (a) equal to its steady current
   (b) slightly higher than its steady current
   (c) slightly less than its steady current
   (d) zero
9. In the series combination of two or more than two resistances
   (a) the current through each resistance is same.
   (b) the voltage through each resistance is same.
   (c) neither current nor voltage through each resistance is same.
   (d) both current and voltage through each resistance are same.
10. Combine three resistors 5 Q, 4.5 Q and 3 Q in such a way that the total resistance of this combination is maximum
   (a) 12.5 Q
   (b) 13.5 Q
   (c) 14.5 Q
   (d) 16.5 Q
11. A cell having an emf E 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



12. In parallel combination of n cells, we obtain
   (a) more voltage
   (b) more current
   (c) less voltage
   (d) less current
13. If n cells each of emf e and internal resistance r are connected in parallel, then the total emf and internal resistance will be

   (a) $\varepsilon, \frac{r}{n}$ **(b)** ε, nr

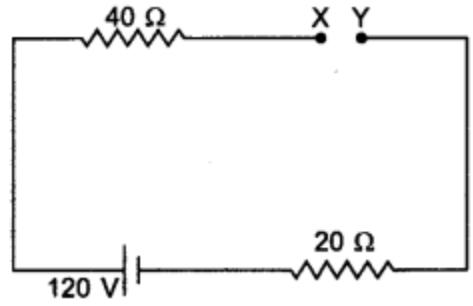
   (d) $n\varepsilon, \frac{r}{n}$ **(d)** $n\varepsilon, nr$

14. In a Wheatstone bridge if the battery and galvanometer are interchanged then the deflection in galvanometer will
   (a) change in previous direction
   (b) not change
   (c) change in opposite direction
   (d) none of these.
15. When a metal conductor connected to left gap of a meter bridge is heated, the balancing point
   (a) shifts towards right
   (b) shifts towards left

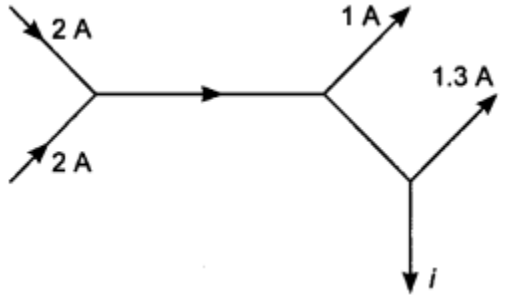
(c) remains unchanged
(d) remains at zero

16. Drift is the random motion of the charged particles within a conductor,
    a. along with a very slow net motion in the opposite direction of the field
    b. along with accelerated motion in the direction of the field
    c. along with a decelerated motion in the direction of the field
    d. along with zero motion in the direction of the field
17. The Wheatstone bridge is balanced for four resistors R_1, R_2, R_3 and R_4 with a cell of emf 1.46 V. The cell is now replaced by another cell of emf 1.08 V. To obtain the balance again
    a. No resistance needs to be changed
    b. Both the resistance R_1 and R_4 should be changed
    c. All the four resistance should be changed
    d. Resistance should be changed only
18. Two cells of 1.25 V and 0.75 V are connected in series with anode of one connected to anode of the other. The effective voltage will be
    a. 1.25 V
    b. 2.0 V
    c. 0.75 V
    d. 0.50 V
19. If the electric current in a lamp decreases by 5%, then the power output decreases by
    a. 20%
    b. 25%
    c. 5%
    d. 10%

20. There are n similar conductors each of resistance R. The resultant resistance comes out to be x when connected in parallel. If they are connected in series, the resistance comes out to be _____ .
21. In the circuit shown, potential difference between X and Y is _____ and across 40 Ω is _____ .

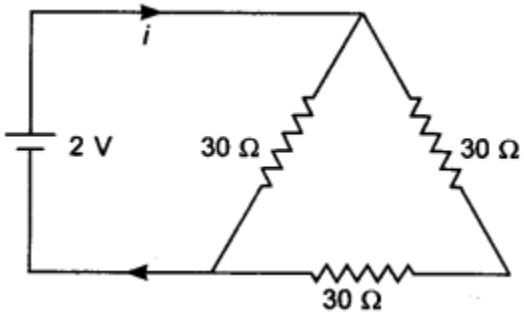


22. The figure below shows currents in a part of electric circuit. The current i is _____ .

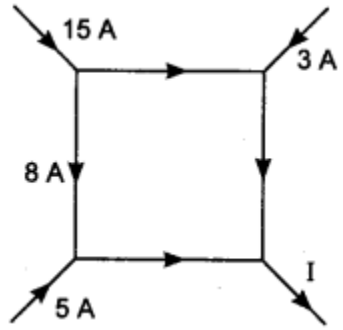


FILL IN THE BLANKS

23. A wire is stretched so as to change its length by 0.1%, the percentage increase in its resistance will be _____ .
24. The current in the given circuit will be _____ .

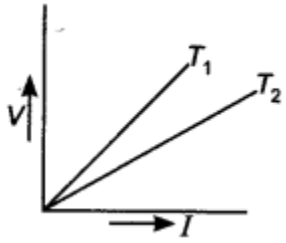


25. A cell of emf E is connected with an external resistance R, then p.d. across cell is V. The internal resistance of cell will be _____ .
26. The figure shows a network of current and the magnitude of current. The current I will be _____ .

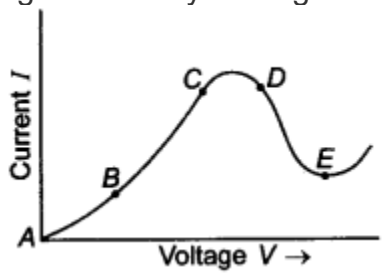


27. When electrons drift in a metal from lower to higher potential, does it mean that all the free electrons of the metal are moving in the same direction?
28. A steady current flows in a metallic conductor of non-uniform cross-section. Which of these quantities is constant along the conductor: current, current density, drift speed and electric field?
29. The electron drift arises due to the force experienced by electrons in the electric field inside the conductor. But force should cause acceleration. Why then do the electrons acquire a steady average drift speed?
30. The electron drift speed is estimated to be only a few mm s^{-1} for currents in the range of a few amperes? How then is current established almost the instant a circuit is closed?
31. Is there a net field inside the cell when the circuit is closed and a steady current passes through? Explain.
32. Plot a graph showing the variation of resistance of a conducting wire as a function of its radius, keeping the length of the wire and its temperature as constant. [Foreign 2013]

33. V-I graph for a metallic wire at two different temperatures T1 and T2 is as shown in the figure. Which of the two temperatures is higher and why?

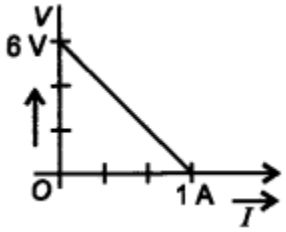


34. The emf of a cell is always greater than its terminal voltage. Why? Give reason.
35. You are given three constantan wires P, Q and R of length and area of cross-section (L, A), (2L, $\frac{A}{2}$), ($\frac{L}{2}$2A) respectively. Which has highest resistance?
36. Two wires of equal length, one of copper and the other of manganin have the same resistance. Which wire is thicker?
37. Nichrome and copper wires of same length and same radius are connected in series. Current/is passed through them. Which wire gets heated up more? Justify your answer.
38. State the condition for maximum current to be drawn from a cell.
39. State the condition under which the terminal potential difference across a battery and its emf are equal.
40. A car battery is of 12 V. Eight dry cells of 1.5 V connected in series also give 12 V, but such a combination is not used to start a car. Why?
41. Graph showing the variation of current versus voltage for a material GaAs is shown in the figure. Identify the region of



(i) negative resistance,
(ii) where Ohm's law is obeyed.

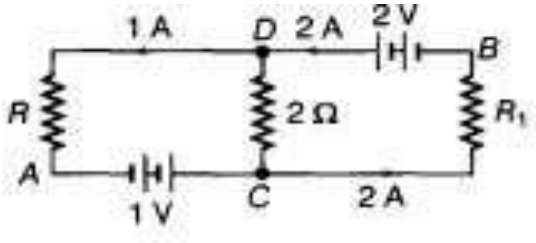
42. Define the term 'electrical conductivity' of a metallic wire. Write its SI unit.
43. Give an example of a material each for which temperature coefficient of resistivity is
(i) positive and
(ii) negative.
44. Show variation of resistivity of copper as a function of temperature in a graph.
45. Two identical cells, each of emf E, having negligible internal resistance r, are connected in parallel with each other across an external resistance R. What is the current through this resistance?
46. The plot of the variation of potential difference across a combination of three identical cells in series, versus current is as shown here. What is the emf of each cell?



47. Why resistance becomes more in series combination?
48. Why resistance becomes less in parallel combination?

49. Two similar wires of same length and same area of cross-section but of different material, having resistivity p1, and p2 are connected end to end (in series). Calculate the effective resistivity of their combination.
50. Two similar wires of same length and same area of cross-section but of different material having resistivity p1 and p2 are connected side by side i.e. in parallel. Calculate the effective resistivity of their combination.

51In the given circuit, assuming point A to be at zero potential, use Kirchhoffs rules to determine the potential at point B.



52 Define the term of drift velocity.

On the basis of electron drift, derive an expression for resistivity of a conductor in terms of number density of free electrons and relaxation time. On what factors does resistivity of a conductor depend?

53Why alloys like Constantan and Manganin are used for making standard resistors?

54.A wire of 20 ohm resistance is gradually stretched to double its original length. It is then cut into two equal parts. These parts are then connected in parallel across a 4.0 volt battery. Find the current drawn from the battery.

55.For the network shown in figure below. Calculate the equivalent resistance between points A and B