



Test 12th Physics Current

Subjects: Physics

Name: Electricity

Marks: 20

Standard: XII Science English
Maharashtra State Board

Duration: 60min

SECTION A

1. **Select and write the correct answer for the following multiple choice type of questions:** **3**

i. A metrebridge cannot be used to determine

(A) resistance of a wire.

(B) specific resistance.

(C) conductivity.

(D) e.m.f of a cell.

ii. Sensitivity of a potentiometer is increased by

(A) increasing the emf of the cell.

(B) increasing the length of potentiometer wire.

(C) decreasing the length of potentiometer wire.

(D) none of these.

iii. The algebraic sum of current at junction in any electric circuit is equal to _____.

(A) zero

(B) ∞

(C) a positive integer

(D) potential difference

2. **Answer the following questions:** **3**

i. There can be three types of electrical conductors: good conductors (metals), semiconductors and bad conductors (insulators). Does a semiconductor diode and resistor have similar electrical properties?

ii. Define or describe a Potentiometer.

iii. How can a galvanometer be converted into an ammeter?

SECTION B

Attempt any TWO questions of the following:

3. Explain the necessary modifications to convert the moving coil galvanometer into an ammeter.
4. A voltmeter has a resistance of $100\ \Omega$. What will be its reading when it is connected across a cell of emf 2 V and internal resistance $20\ \Omega$?
5. Explain: Kirchhoff's current law is based on the law of conservation of charge.
6. State any two sources of errors in metrebridge experiment. Explain how they can be minimized.

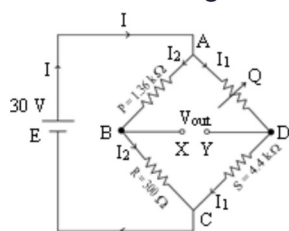
SECTION C

Attempt any TWO questions of the following:

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7. State and explain Kirchhoff's current law in electric circuit. State their sign conventions.
8. A. Obtain the balancing condition in case of a Wheatstone's network.
B. Why is potentiometer preferred over a voltmeter for measuring emf?
- 9.

At what value should the variable resistor Q be set in the circuit such that the bridge is balanced? If the source voltage is 30 V find the value of the output voltage across XY , when the bridge is balanced.



SECTION D

Attempt any ONE question of the following:

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10. A. State the applications of Wheatstone bridge.
B. What is the value of the shunt resistance that allows 20% of the main current through a galvanometer of $99\ \Omega$?
11. Describe with the help of a neat circuit diagram how you will determine the internal resistance of a cell by using a potentiometer. Derive the necessary formula.