SHIKSHA CLASSES

Subject : Physics | **BOARD QUESTION PAPER** | **Total Marks : 20**
Class : XII | **Topic: 9. Current Electricity** | **Time : 1 Hr.**

Section (A)

Q.1 : Select and write the most appro priate answer from given alternatives in each sub-question **5**

i) Kirchhoff's current law is in accordance with the law of conservation of

a) Mass b) Energy c) Charge d) Momentum

ii) The least number of cells each of emf 2.0 V and internal resistance 0.5 ohm to produce current of a 2 A in an external resistance 4.0 ohm will be..

a) 12 cells b) 10 cells c) 8 cells d) 14 cells

iii) In meter bridge experiment, to minimize the error due to contact resistance

a) The null point is taken near the centre of wire

b) The null point is taken near the ends of the wire

c) The null point is not obtained

d) None of these

iv) A potentiometer is used to measure the e.m.f. of a cell. At the null point, no current flows through

a) the main circuit b) the cell

c) both main and cell circuits d) none of the above

v) Three resistors each of 2 ohm are connected together in a triangular shape. The resistance between any two vertices will be..

a) 4/3 ohm b) 3/4 ohm c) 3 ohm 4) 6 ohm

Q.2 : Very short answer type Question **2**

i) State the principle of potentiometer.

ii) Internal resistance of a cell depends on which factors?

Section (B)

: **Attempt any three** **6**

Q.3 : State Kirchhoff's laws.

Q.4 :. A galvanometer has a resistance of 50 ohm and its full scale of deflection current is 50 μA. What resistance should be added to it to have a range of 0-10 V?

Q.5 : State any two sources of errors in meter bridge experiment and how to minimize it.

Q.6 : The e.m.f. of a cell is 2V. It balances the length of 250 cm of a potentiometer wire when it is in open circuit. When it is shunted by a resistance of 4 Ω , the balancing length is reduced by 50 cm. Calculate the internal resistance of cell.

Section (C)

: **Attempt any one** **3**

Q.7 : Obtain the condition for balanced Wheatstone's network.

Q.8 :. Explain the use of potentiometer to compare the e.m.f.s of two cells by sum and difference method.

Section (D)

: **Attempt any one** **4**

Q.9 : i) Explain the use of potentiometer to determine the internal resistance of a cell.

ii) A potentiometer wire of length 4 m has a resistance of 4 Ω . What resistance must be connected in series with the wire and a battery of e.m.f. 2V so as to get a potential drop of $100\ \mu V / mm$ along the wire?

Q10 : i) Explain the use of potentiometer to compare the e.m.f.s of two cells by connecting them individually.

ii) A wire of uniform cross-section is bent in the shape of a ring. Two diametrically opposite points on the wire are connected in the left gap of a meter bridge. In the right gap, a resistance of 15 Ω is introduced. If the null point is obtained at 70 cm from the left end of the meter bridge wire, find the resistance of the wire of the ring.

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