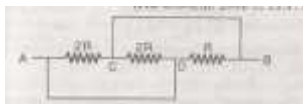AFGJI

CLASS XII
PHYSICS ASSIGNMENT

Q1. What is the equivalent resistance between points A and B of the circuit shown.



Q2.If each resistance in the circuit is of 5Ω each then calculate effective resistance between points A and B. If a battery of 2V, 1Ω internal resistance is connected across points A and B then calculate current in branches PQ, QR, PR and OQ.



Q3. In a meter bridge balance point D is obtained when S is 12.5Ω and AD is 39.5cm. Determine the value of R.What happens if galvanometer and cell are interchanged at the balance point of the bridge? Would the galvanometer show any deflection?
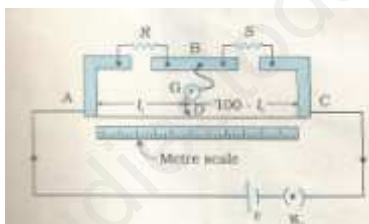


Q4. When two unknown resistances R and S are connected in a meter bridge as shown, then balance point is found to be $l_1$.An unknown resistance X is now connected in parallel to the resistance S and the new balance point is found to be at $l_2$. Obtain an expression for X in terms of $l_1$, $l_2$ and S.

Q5.Two primary cells of emfs $E_1$ and $E_2$ are connected as shown in the diagram. If balance lengths of the two combinations are 325cm and 575 cm respectively.Find the ratio of $E_1$ to $E_2$.
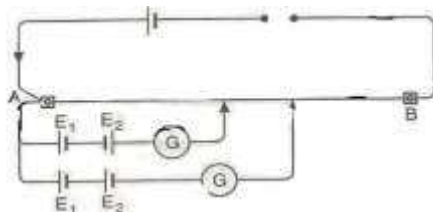


Q6. The variation of potential difference V with length $l$ for two potentiometers is shown in the graph. Which of these would you prefer for determination of internal resistance of a cell and why?
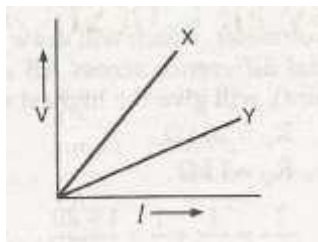
Q7.Why is a potentiometer preferred over a voltmeter to measure emf of a cell?

Q8.A potentiometer has an auxiliary cell of emf $E_0$ =2.0V, r=0.4Ω connected to a resistance wire AB. A primary cell of emf $E_1$=1.02V is in the secondary circuit and gives a balance point at 67.3cm. To ensure low currents from $E_1$ a high resistance of 600kΩ is connected in series with it which is shorted near the balance point.This primary cell is replaced by another primary cell of emf $E_2$. The balance  length was found to be 82.3cm.

(i) Calculate the value of E2?

(ii) What is the purpose of connecting high resistance of 600k?

(iii) Is the balance point affected by this resistance?

(iv) Is the balance point affected by the internal resistance of (a) $E_0$, (b) $E_1$?

(v) Can the balance  length be found if $E_0$ is 1.0V?

(vi) Can the circuit be used for determining emfs of the order of few mV?