

TEST SERIES (PHYSICS)

MT-11/4H

CURRENT -ELECTRICITY

MM-30

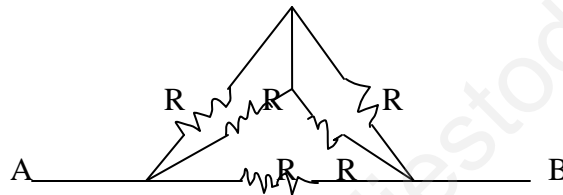
Q1. A resistance R is connected across a cell of emf E , and internal resistance r . A potentiometer now measures the p.d., between the terminals of the cell as V . Write the expression for r in terms of E , V , and R (1)

Q2. Two wires A and B of which lengths are in the ratio 1:2 and the area of cross-section are in the ratio 2:1 and of same resistivity are connected in parallel with the same source of emf. Find the ratio of drift velocities in the given two wires. (1)

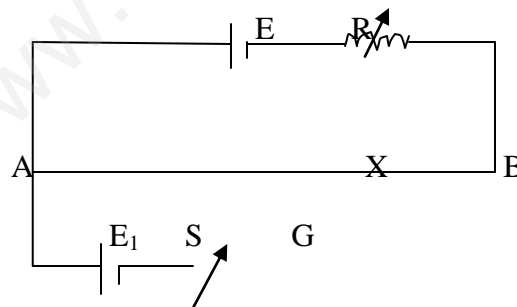
Q3. Resistance of a wire is $3.4 \text{ k}\Omega \pm 5\%$. Write the order of coloured rings representing the given resistance. (1)

Q4. Draw the resistivity ρ vs temperature t graph for a conductor. (1)

Q5. Find the equivalent resistance between A and B. (1)

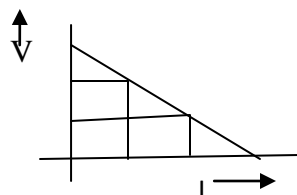


Q6. In the following the circuit if X is the position of the null point, write with reason what would be the change in position of null point due to following changes? (a) if the resistance R is increased (b) if the resistance S is increased by keeping R constant. (2)



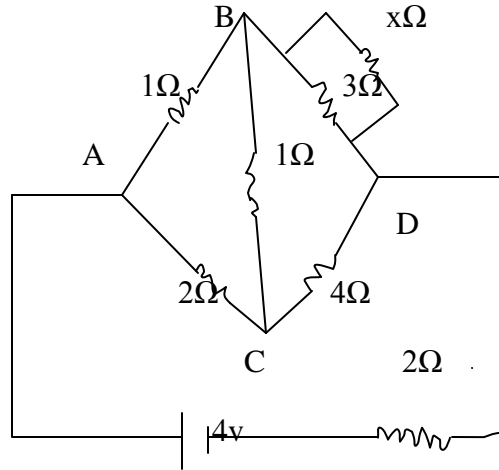
Q7. At the balancing condition of meter bridge if cell and galvanometer are interchanged, write with reason whether we will obtain zero deflection in galvanometer again? (2)

Q8. P.d. V vs I graph for the series combination of two identical cells is given below. (a) find the emf of each cell. (b) find the internal resistance of each cell. (2)



Q9. By using Kirchhoff's rule derive the balancing condition of Wheatstone bridge. (2)

Q10.



(A) For which value of x current in the arm BC will be zero?

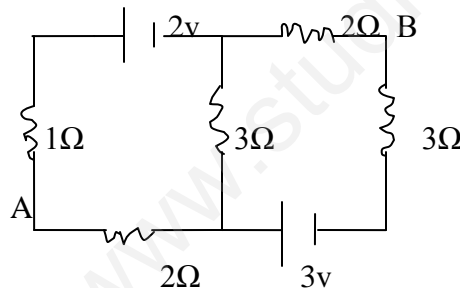
(B) Find the current in the circuit.

(1+1)

Q11. Power across the resistances R_1 and R_2 are found to be P_1 and P_2 respectively find the power across the combination (a) when they are connected in series. (b) when they are connected in parallel. (3)

Q12. Define the resistivity? On which factor basically it depends? Derive an expression for resistivity. Write its unit? A wire is stretched up to double of its original length what will be the effect on its resistivity? (3)

Q13.
circuit?



Find current in different branch of
Find $V_B - V_A$. (3)

Q14. In meterbridge experiment a resistance of 2Ω is connected in left gap. Null point was found to be at 40cm from left end. A cell of EMF 2V is used. If the current in the cell is 3A. Find the current in the meter bridge wire. Find its resistance also. If a resistance of 6Ω shunted with the resistance in the right gap find new position of null point. (3)

Q15. If a cell of emf 4V is applied across 4m length of potentiometer wire through a series resistance of 1Ω . Resistance of potentiometer wire is $0.25\Omega/\text{m}$. Find which length of potentiometer wire will balance to emf 2V of a cell of internal resistance 0.5Ω with a resistance of 1.5Ω in parallel with it. (3)