DPP – 9
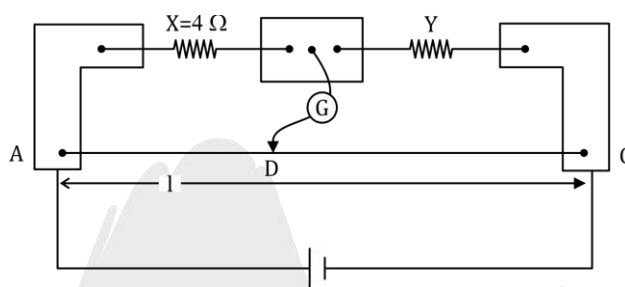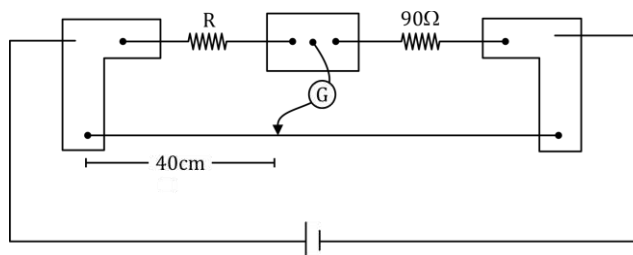
Q.1 In figure a meter bridge, A wire AC has uniform cross-section. length of AC is 100 cm. Y is a coil & x is a standard resistor of 4Ω. When Y is immersed in melting ice the null deflection point is at 40 cm from point A. When the coil Y is heated to 100°C $R\Omega$ resistor has to be connected in paralled with Y in order to keep the bridge balanced at the same point If $[\alpha_{coil} = 6.3 \times 11^{-4}/K$ find value of R _ _ _ _ _.

Q.2 In a meter bridge, null point is found to be at 20 cm, when the unknow resistance R is shunted by 10Ω resistance, null point is found to be shifted by 10 cm. the unknown resistance x, is _____.

Q.3 Resistance R_1 in resistance box is 100Ω & balanced length 75 cm from end A. The diameter of unknown wire is 1 mm and length of the Unknown wire is 20 cm. the specific resistance of the unknow wire ρ is $N\pi \times 10^{-3}\Omega - m$, value of N is

Q.4 Resistance in the two gaps of a meter bridge are 10Ω & 30Ω respectively. If the resistance are interchanged the balance point shifts by.

(A) 33.3 cm   (B) 50 cm   (C) 25 cm   (D) 66.67 cm

Q.5 During an experiment with a metre bridge, the galvanometer shows a null point when the jockey is pressed at 40 cm using a standerd resistance of 90Ω as shown in the figure. The least count of the scale used in the metre bridge is 1 mm. The unknown resistance is
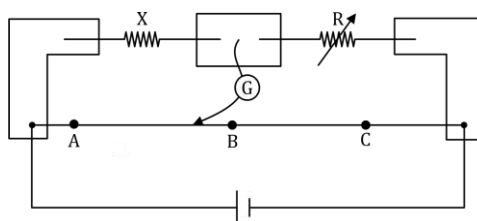

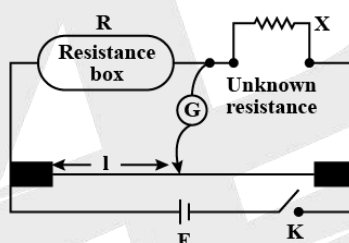(A) $135 \pm 0.23\Omega$ (B) $60 \pm 0.15\Omega$ (C) $60 \pm 0.25\Omega$ (D) $135 \pm 0.56\Omega$

Q.6 For which resistance, the value of x will be the most accurate, If R_1, R_2, R_3 are different values of R. A, B &C are the respective null points obtained

(A) R_1 (B) R_2 (C) R_3 (D) For all

[Think about reason]

Q.7. In a meter bridge experiment, the circuit diagram and the corresponding observation table are shown in figure.
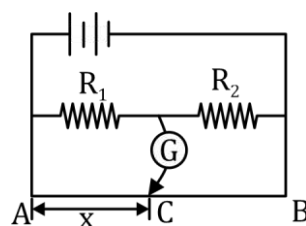

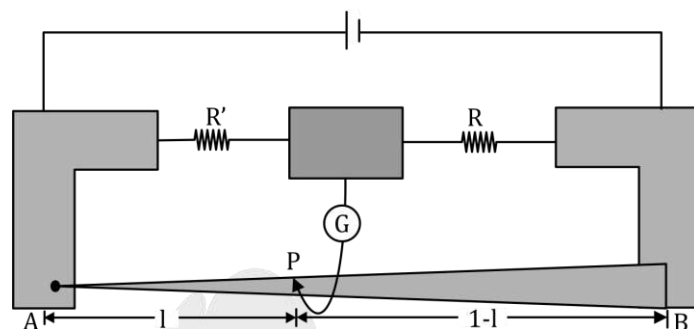| S. No.	R(Ω)	I(cm)
1.	1000	60
2.	100	13
3.	10	1.5
4.	1	1.0

Which of the readings is inconsistent?

(A) 1   (B) 2   (C) 3   (D) 4

Q.8 In the shown arrangement of the experiment of the meter bridge if AC corresponding to null deflection of galvanometer is x, what would be its value if the radius of the wire AB is doubled?

(A) x   (B) $\frac{x}{4}$ (C) 4x   (D) 2x

Q.9 In a meter bridge, the wire of length 1 m has a nonuniform cross-section such that, the variation $\frac{dR}{dl}$ of its resistance R with length l is $\frac{dR}{dl} \propto \frac{1}{\sqrt{l}}$. Two equal resistances are connected as shown in the figure. The galvanometer has zero deflection when the jockey is at point P. What is the length AP ?

(A) 0.2 m   (B) 0.35 m   (C) 0.25 m   (D) 0.3 m

ANSWER KEY

1. $R = 101\Omega$ **2.** $x = 50\ \Omega$ **3.** $N = 1/6$ **4.**   (B)   **5.**   (C)   **6.**   (B)

7.   (D)   **8.**   (A)   **9.**   (C)