

NEET CURRENT ELECTRICITY — POTENTIOMETER (OLD SYLLABUS) — PYQS

Max. Marks: 40

Questions: 10

Section A (MCQ) — 10 questions

- Q.1** In a potentiometer circuit a cell of EMF 1.5 V gives balance point at 36 cm length of wire. If another cell of EMF 2.5 V replaces the first cell, then at what length of the wire, the balance point occurs?

[NEET (UG) 2021]

- (1) 62 cm (2) 60 cm (3) 21.6 cm (4) 64 cm

Scan or tap for the full solution



- Q.2** A potentiometer is an accurate and versatile device to make electrical measurements of EMF because the method involves

[NEET 2017]

- (1) potential gradients
(2) a condition of no current flow through the galvanometer
(3) a combination of cells, galvanometer and resistances
(4) cells

Scan or tap for the full solution



- Q.3** A potentiometer wire is 100 cm long and a constant potential difference is maintained across it. Two cells are connected in series first to support one another and then in opposite direction. The balance points are obtained at 50 cm and 10 cm from the positive end of the wire in the two cases. The ratio of emf's is

[NEET 2016 (Phase 1)]

- (1) 3 : 4 (2) 3 : 2 (3) 5 : 1 (4) 5 : 4

Scan or tap for the full solution



- Q.4** A potentiometer wire of length L and a resistance r are connected in series with a battery of e.m.f. E_0 and a resistance r_1 . An unknown e.m.f. E is balanced at a length l of the potentiometer wire. The e.m.f. E will be given by

[AIPMT 2015]

- (1) $\frac{E_0 l}{L}$ (2) $\frac{LE_0 r}{(r + r_1)l}$
(3) $\frac{LE_0 r}{lr_1}$ (4) $\frac{E_0 r}{(r + r_1)} \cdot \frac{l}{L}$

Scan or tap for the full solution



- Q.5** A potentiometer wire has length 4 m and resistance 8Ω . The resistance that must be connected in series with the wire and an accumulator of e.m.f. 2 V, so as to get a potential gradient 1 mV per cm on the wire is

[AIPMT 2015 (Cancelled)]

- (1) 44Ω (2) 48Ω (3) 32Ω (4) 40Ω

Scan or tap for the full solution



- Q.6** A potentiometer circuit has been set up for finding the internal resistance of a given cell. The main battery, used across the potentiometer wire, has an emf of 2.0 V and a negligible internal resistance. The potentiometer wire itself is 4 m long. When the resistance R , connected across the given cell, has values of (i) infinity, (ii) 9.5Ω , the balancing lengths on the potentiometer wire are found to be 3 m and 2.85 m, respectively. The value of internal resistance of the cell is

[AIPMT 2014]

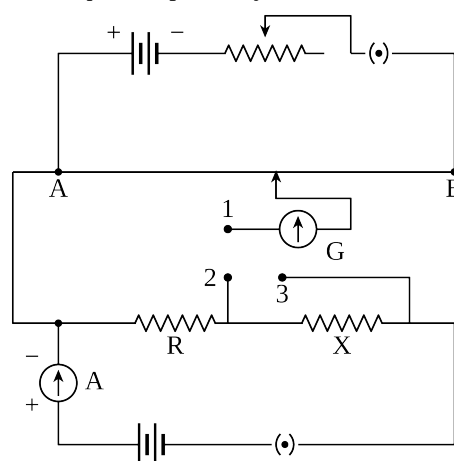
- (1) 0.25Ω (2) 0.95Ω (3) 0.5Ω (4) 0.75Ω

Scan or tap for the full solution



- Q.7** A potentiometer circuit is set up as shown. The potential gradient, across the potentiometer wire, is k volt/cm and the ammeter, present in the circuit, reads 1.0 A when two way key is switched off. The balance points, when the key between the terminals (i) 1 and 2 (ii) 1 and 3, is plugged in, are found to be at length l_1 cm and l_2 cm respectively. The magnitudes, of the resistors R and X , in ohms, are then, equal, respectively, to

[AIPMT 2010 (Prelims)]



- (1) $k(l_2 - l_1)$ and kl_2 (2) kl_1 and $k(l_2 - l_1)$
 (3) $k(l_2 - l_1)$ and kl_1 (4) kl_1 and kl_2

Scan or tap for the
full solution



Q.8 A cell can be balanced against 110 cm and 100 cm of potentiometer wire, respectively without and with being short circuited through a resistance of $10\ \Omega$. Its internal resistance is [AIPMT 2008]

- (1) 2.0 ohm (2) zero (3) 1.0 ohm (4) 0.5 ohm

Scan or tap for the
full solution



Q.9 If specific resistance of a potentiometer wire is $10^{-7}\ \Omega\text{ m}$ and current flow through it is 0.1 amp., cross-sectional area of wire is 10^{-6} m^2 then potential gradient will be [AIPMT 2001]

- (1) 10^{-2} (2) 10^{-4} (3) 10^{-6} (4) 10^{-8}
 volt/m volt/m volt/m volt/m

Scan or tap for the
full solution



Q.10 The potentiometer is best for measuring voltage, as [AIPMT 2000]

- (1) it has a sensitive galvanometer and gives null deflection
 (2) it has wire of high resistance
 (3) it measures p.d. in closed circuit
 (4) it measures p.d. in open circuit.

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	2	2	2	4	3	3	2	3	1	1	