

NEET MOVING CHARGES AND MAGNETISM — MOVING COIL GALVANOMETER, CONVERSION TO AMMETER AND VOLTMETER — PYQS

Max. Marks: 60

Questions: 15

Section A (MCQ) — 15 questions

Q.1 A galvanometer of resistance $100\ \Omega$ gives full scale deflection for a current of $1\ \text{mA}$. It is converted into an ammeter of range $0 - 10\ \text{A}$. The shunt required is :

[NEET (UG) 2026]

- (1) $0.001\ \Omega$ (2) $0.10\ \Omega$ (3) $1.0\ \Omega$ (4) $0.01\ \Omega$

Scan or tap for the full solution 

Q.2 Current sensitivity of a moving coil galvanometer is $5\ \text{div/mA}$ and its voltage sensitivity (angular deflection per unit voltage applied) is $20\ \text{div/V}$. The resistance of the galvanometer is

[NEET 2018]

- (1) $40\ \Omega$ (2) $25\ \Omega$ (3) $250\ \Omega$ (4) $500\ \Omega$

Scan or tap for the full solution 

Q.3 A circuit contains an ammeter, a battery of $30\ \text{V}$ and a resistance $40.8\ \text{ohm}$ all connected in series. If the ammeter has a coil of resistance $480\ \text{ohm}$ and a shunt of $20\ \text{ohm}$, the reading in the ammeter will be

[AIPMT 2015]

- (1) $2\ \text{A}$ (2) $1\ \text{A}$ (3) $0.5\ \text{A}$ (4) $0.25\ \text{A}$

Scan or tap for the full solution 

Q.4 In an ammeter 0.2% of main current passes through the galvanometer. If resistance of galvanometer is G , the resistance of ammeter will be

[AIPMT 2014]

- (1) $\frac{1}{499}G$ (2) $\frac{499}{500}G$ (3) $\frac{1}{500}G$ (4) $\frac{500}{499}G$

Scan or tap for the full solution 

Q.5 A millivoltmeter of $25\ \text{millivolt}$ range is to be converted into an ammeter of $25\ \text{ampere}$ range. The value (in ohm) of necessary shunt will be

[AIPMT 2012 (Prelims)]

- (1) 0.001 (2) 0.01 (3) 1 (4) 0.05

Scan or tap for the full solution 

Q.6 A galvanometer of resistance, G , is shunted by a resistance $S\ \text{ohm}$. To keep the main current in the circuit unchanged, the resistance to be put in series with the galvanometer is

[AIPMT 2011 (Mains)]

$$(1) \frac{G}{(S+G)} \quad (2) \frac{S^2}{(S+G)}$$

$$(3) \left(\frac{SG}{S+G} \right) \quad (4) \frac{G^2}{(S+G)}$$

Scan or tap for the full solution 

Q.7 A thermocouple of negligible resistance produces an e.m.f. of $40\ \mu\text{V}/^\circ\text{C}$ in the linear range of temperature. A galvanometer of resistance $10\ \text{ohm}$ whose sensitivity is $1\ \mu\text{A}/\text{division}$, is employed with the thermocouple. The smallest value of temperature difference that can be detected by the system will be

[AIPMT 2011 (Mains)]

- (1) 1°C (2) 0.5°C (3) 0.1°C (4) 0.25°C

Scan or tap for the full solution 

Q.8 A galvanometer has a coil of resistance $100\ \text{ohm}$ and gives a full scale deflection for $30\ \text{mA}$ current. If it is to work as a voltmeter of $30\ \text{volt}$ range, the resistance required to be added will be

[AIPMT 2010 (Prelims)]

- (1) $900\ \Omega$ (2) $1800\ \Omega$ (3) $500\ \Omega$ (4) $1000\ \Omega$

Scan or tap for the full solution 

Q.9 A galvanometer has a coil of resistance $100\ \text{ohm}$ and gives a full scale deflection for $30\ \text{mA}$ current. If it is to work as a voltmeter of $30\ \text{volt}$ range, the resistance required to be added will be

[AIPMT 2010 (Prelims)]

- (1) $900\ \Omega$ (2) $1800\ \Omega$ (3) $500\ \Omega$ (4) $1000\ \Omega$

Scan or tap for the full solution 

Q.10 A galvanometer having a coil resistance of $60\ \Omega$ shows full scale deflection when a current of $1.0\ \text{amp}$ passes through it. It can be converted into an ammeter to read currents up to $5.0\ \text{amp}$ by

[AIPMT 2009]

- (1) putting in series a resistance of $15\ \Omega$
- (2) putting in series a resistance of $240\ \Omega$
- (3) putting in parallel a resistance of $15\ \Omega$
- (4) putting in parallel a resistance of $240\ \Omega$

Scan or tap for the
full solution



Q.11 A galvanometer of resistance $50\ \Omega$ is connected to a battery of 3 V along with a resistance of $2950\ \Omega$ in series. A full scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions, the resistance in series should be [AIPMT 2008]

- (1) $6050\ \Omega$ (2) $4450\ \Omega$ (3) $5050\ \Omega$ (4) $5550\ \Omega$

Scan or tap for the
full solution



Q.12 The resistance of an ammeter is $13\ \Omega$ and its scale is graduated for a current upto 100 amps. After an additional shunt has been connected to this ammeter it becomes possible to measure currents upto 750 amperes by this meter. The value of shunt-resistance is [AIPMT 2007]

- (1) $2\ \Omega$ (2) $0.2\ \Omega$ (3) $2\text{ k}\Omega$ (4) $20\ \Omega$

Scan or tap for the
full solution



Q.13 A galvanometer of $50\ \Omega$ resistance has 25 divisions. A current of 4×10^{-4} ampere gives a deflection of one division. To convert this galvanometer into a voltmeter having a range of 25 volts, it should be connected with a resistance of [AIPMT 2004]

- (1) $2500\ \Omega$ as a shunt (2) $2450\ \Omega$ as a shunt
(3) $2550\ \Omega$ in series (4) $2450\ \Omega$ in series

Scan or tap for the
full solution



Q.14 To convert a galvanometer into a voltmeter one should connect a [AIPMT 2004]

- (1) high resistance in series with galvanometer
- (2) low resistance in series with galvanometer
- (3) high resistance in parallel with galvanometer
- (4) low resistance in parallel with galvanometer

Scan or tap for the
full solution



Q.15 To convert a galvanometer into a voltmeter one should connect a [AIPMT 2002]

- (1) high resistance in series with galvanometer
- (2) low resistance in series with galvanometer
- (3) high resistance in parallel with galvanometer
- (4) low resistance in parallel with galvanometer.

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	3	3	3	1	4	4	1	1	3	2
Ques.	12	13	14	15							
Ans.	1	4	1	1							