

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

Max. Marks: 16
Questions: 4

Section A (MCQ) — 3 questions

Q.1 A voltmeter with internal resistance of $x \, \Omega$ can be used to measure up to 20 V. In order to increase its measuring range to 30 V, the required modification is to _____.

[JEE Main 2026 (Online) 4th April Morning Shift]

- (1) connect resistor of $\frac{x}{2} \, \Omega$, in series with voltmeter.
- (2) connect resistor of $\frac{x}{2} \, \Omega$, in parallel to voltmeter.
- (3) connect a resistor of $x \, \Omega$ in series with voltmeter.
- (4) connect resistor of $2x \, \Omega$ in parallel to voltmeter.

Scan or tap for the full solution



Q.2 A moving coil galvanometer of resistance 100 Ω shows a full scale deflection for a current of 1 mA. The value of resistance required to convert this galvanometer into an ammeter, showing full scale deflection for a current of 5 mA, is _____ Ω

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) 25 (2) 2.5 (3) 0.5 (4) 10

Scan or tap for the full solution



Q.3 In a moving coil galvanometer, two moving coils M_1 and M_2 have the following particulars :
 $R_1 = 5 \, \Omega$, $N_1 = 15$, $A_1 = 3.6 \times 10^{-3} \, \text{m}^2$, $B_1 = 0.25 \, \text{T}$
 $R_2 = 7 \, \Omega$, $N_2 = 21$, $A_2 = 1.8 \times 10^{-3} \, \text{m}^2$, $B_2 = 0.50 \, \text{T}$
 Assuming that torsional constant of the springs are same for both coils, what will be the ratio of voltage sensitivity of M_1 and M_2 ?

[JEE Main 2025 (Online) 2nd April Evening Shift]

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

Scan or tap for the full solution



Section B (Numerical) — 1 question

Q.4 A moving coil of galvanometer when shunted with $2 \, \Omega$ resistance gives a full scale deflection for a current of 500 mA. When a resistance of $470 \, \Omega$ is connected in series it gives a full scale deflection for 10 V potential applied on it. The value of resistance of galvanometer coil is _____ Ω .

[JEE Main 2026 (Online) 6th April Evening Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 3 questions

Ques.	1	2	3										
Ans.	1	1	1										

Section B (Numerical) — 1 question

Ques.	4												
Ans.	50												