

JEE MAIN ELECTROMAGNETIC INDUCTION — ENERGY STORED IN AN INDUCTOR — PYQS

Max. Marks: 12

Questions: 3

Section A (MCQ) — 1 question

Q.1 A solenoid having area A and length l is filled with a material having relative permeability 2 . The magnetic energy stored in the solenoid is :

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

- (1) $\frac{B^2 \mu_0}{4\mu_0}$ (2) $\frac{B^2 \mu_0}{2\mu_0}$ (3) $\frac{B^2 \mu_0}{\mu_0}$ (4) $B^2 \mu_0$

Scan or tap for the full solution

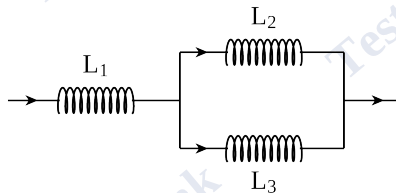


Section B (Numerical) — 2 questions

Q.2 In the given circuit below inductance values of L_1 , L_2 and L_3 are same. The magnetic energy stored in the entire circuit is (U_i) and that stored in the L_2 inductor is (U_j) . U_j/U_i is _____.

(Ignore the mutual inductance if any)

[JEE Main 2026 (Online) 5th April Morning Shift]



Scan or tap for the full solution



Q.3 Inductance of a coil with 10^4 turns per metre is 10 mH and it is connected to a dc source of 10 V with internal resistance of $10\ \Omega$. The energy density in the inductor when the current reaches $\left(\frac{1}{e}\right)$ of its

maximum value is $\alpha\pi \times \frac{1}{e^2} \text{ J/m}^3$. The value of α is

_____.

($\mu_0 = 4\pi \times 10^{-7} \text{ T m/A}$).

$$(\mu_0 = 4\pi \times 10^{-7} \text{ T m/A}).$$

[JEE Main 2026 (Online) 22nd January Morning Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 1 question

[illegible]

Section B (Numerical) — 2 questions

Ques.	2	3							
Ans.	6	20							