

PYQSide

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

Max. Marks: 12

Questions: 3

Section A (MCQ)

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

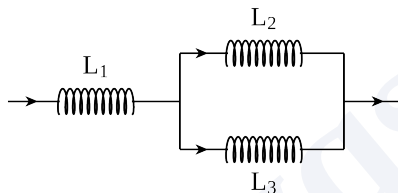
Scan or tap for the
full solution



Section B (Numerical)

- 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_t) and that stored in the L_2 inductor is (U_l). U_l/U_t 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 Ω . 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 _____.
($\mu_0 = 4\pi \times 10^{-7} \text{ T m/A}$).

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

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full solution



ANSWER KEY

Section A (MCQ)

Ques.	1													
Ans.	1													

Section B (Numerical)

Ques.	2	3												
Ans.	6	20												