

NEET ELECTROMAGNETIC INDUCTION — SELF-INDUCTANCE — PYQS

Max. Marks: 40

Questions: 10

Section A (MCQ) — 10 questions

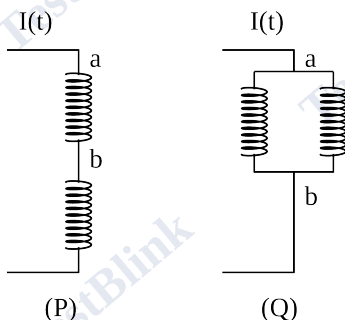
Q.1 Consider a long solenoid of length l and radius r . If n is the number of turns per unit length and μ_0 is the permeability of free space, the inductance of the solenoid is : [RE-NEET (UG) 2026]

- (1) $2\mu_0\pi n^2 r^2 l$ (2) $\mu_0\pi n^2 r^2 l$
 (3) $\mu_0 n^2 r^2 l$ (4) $(\mu_0/2\pi)n^2 r^2 l$

 Scan or tap for the
full solution


Q.2 Two identical inductors are connected in two different configurations P and Q, where a time varying current $I(t)$ is flowing, as shown in the figure. The induced emf between points a and b for configuration P is E_P and that for configuration Q is E_Q . The ratio E_P/E_Q is: [Neglect the effect of mutual inductance.]

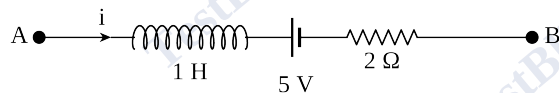
[RE-NEET (UG) 2026]



- (1) 2 (2) $1/4$ (3) $1/2$ (4) 1

 Scan or tap for the
full solution


Q.3 AB is a part of an electrical circuit (see figure). The potential difference " $V_A - V_B$ ", at the instant when current $i = 2$ A and is increasing at a rate of 1 amp/second is: [NEET (UG) 2025]



- (1) 9 volt (2) 10 volt (3) 5 volt (4) 6 volt

 Scan or tap for the
full solution


Q.4 Let us consider two solenoids A and B, made from same magnetic material of relative permeability μ_r and equal area of cross-section. Length of A is twice that of B and the number of turns per unit length in A is half that of B. The ratio of self inductances of the two solenoids, $L_A:L_B$ is [RE-NEET (UG) 2024]

- (1) 1:2 (2) 2:1 (3) 8:1 (4) 1:8

 Scan or tap for the
full solution


Q.5 A long solenoid has 1000 turns. When a current of 4 A flows through it, the magnetic flux linked with each turn of the solenoid is 4×10^{-3} Wb. The self-inductance of the solenoid is [NEET 2016 (Phase 1)]

- (1) 2 H (2) 1 H (3) 4 H (4) 3 H

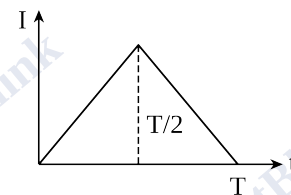
 Scan or tap for the
full solution


Q.6 A current of 2.5 A flows through a coil of inductance 5 H. The magnetic flux linked with the coil is [NEET 2013 (Karnataka)]

- (1) 0.5 Wb (2) 12.5 Wb (3) zero (4) 2 Wb

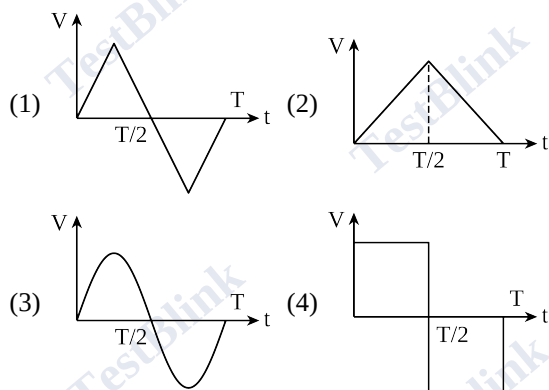
 Scan or tap for the
full solution


Q.7 The current (I) in the inductance is varying with time according to the plot shown in figure.



Which one of the following is the correct variation of voltage with time in the coil ? [AIPMT 2012 (Prelims)]

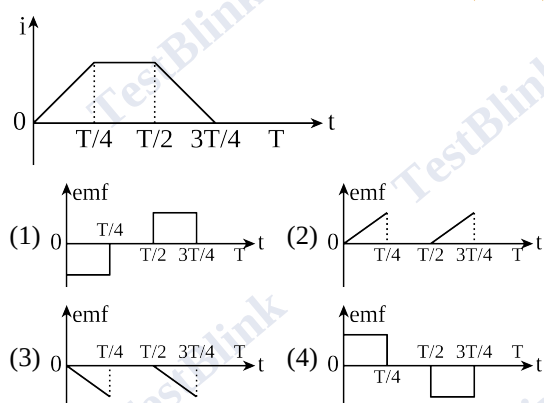
[AIPMT 2012 (Prelims)]



Scan or tap for the full solution



- Q.8** The current i in a coil varies with time as shown in the figure. The variation of induced emf with time would be [AIPMT 2011 (Prelims)]



Scan or tap for the full solution



- Q.9** A long solenoid has 500 turns. When a current of 2 ampere is passed through it, the resulting magnetic flux linked with each turn of the solenoid is 4×10^{-3} Wb. The self-inductance of the solenoid is

[AIPMT 2008]

- (1) 1.0 henry (2) 4.0 henry
(3) 2.5 henry (4) 2.0 henry

Scan or tap for the full solution



- Q.10** For a coil having $L = 2$ mH, current flow through it is $I = t^2 e^{-t}$ then, the time at which emf becomes zero

[AIPMT 2001]

- (1) 2 sec (2) 1 sec (3) 4 sec (4) 3 sec

Scan or tap for the full solution



ANSWER KEY

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