SHAHEEN GROUP OF INSTITUTIONS
Bidar (Head Office)

Class : NEET Repeaters Sub: Physics Worksheet–18 Date: 08-02-2019

Electro Magnetic Induction-2

1. A solenoid of 10 Henry inductance and 2 ohm resistance, is connected to a 10 volt battery. In how much time the magnetic energy will be reaches to $1/4^{th}$ of the maximum value?
(A) 3.5 sec (B) 2.5 sec (C) 5.5 sec (D) 7.5 sec

2. Which statement is correct from following–
a. Inductor store energy in the form of magnetic field.
b. Capacitor store energy in the form of electric field.
c. Inductor store energy in the form of electric and magnetic field both.
d. Capacitor store energy in the form of electric and magnetic field both.
(A) a, b (B) a, c (C) b, d (D) b, c

3. If a current of 2A give rise a magnetic flux of 5×10^{-5} Weber/turn through a coil having 100 turns, then the magnetic energy stored in the medium surrounding by the coil is
(A) 5 joule (B) 5×10^{-7} joule (C) 5×10^{-3} joule (D) 0.5 joule

4. For a solenoid keeping the turn density constant its length makes halved and its cross section radius is doubled then the inductance of the solenoid increased by
(A) 200% (B) 100% (C) 800% (D) 700%

5. When a current changes from 2A to 4A in 0.05 sec. in a coil, induced emf is 8V. The self inductance of coil is
(A) 0.1 H (B) 0.2 H (C) 0.4 H (D) 0.8 H

6. A small square loop of wire of side l is placed inside a large square loop of wire of side L($L >> l$). The loops are coplanar and their centres coincide. The mutual inductance of the system is proportional to
(A) $\frac{l}{L}$ (B) $\frac{l^2}{L}$ (C) $\frac{L}{l}$ (D) $\frac{L^2}{l}$

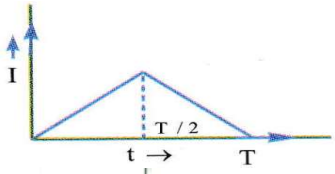
7. Two coil have a mutual inductance 0.005 H. The current changes in first coil according to equation $I = I_0 \sin \omega t$, where $I_0 = 2A$ and $\omega = 100\pi$ rad/sec. The maximum value of induced emf in second coil is
(A) $4\pi V$ (B) $3\pi V$ (C) $2\pi V$ (D) πV

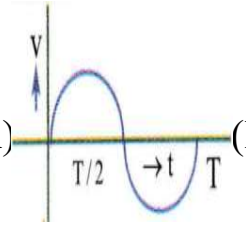
8. The mutual inductance of two coils when magnetic flux changes by 2×10^{-2} Wb and current changes by 0.01 A is
(A) 2 H (B) 3 H (C) 4 H (D) 8 H

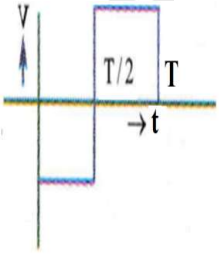
9. Mutual inductance of two coils depends on their self inductance L_1 and L_2 as
(A) $M_{12} = L_1/L_2$ (B) $M_{12} = L_2/L_1$ (C) $M_{12} = \sqrt{L_1 L_2}$ (D) $M_{12} = \sqrt{L_1/L_2}$

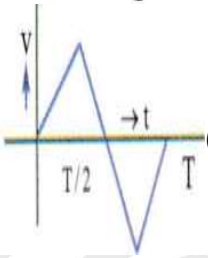
10. Two coaxial solenoids are made by winding thin Cu wire over a pipe of cross-sectional area A = 10 cm^2 and length = 20cm. If one of the solenoids has 300 turns and the other 400 turns, their mutual inductance is
(A) $2.4\pi \times 10^{-5}$ H (B) $4.8\pi \times 10^{-4}$ H (C) $4.8\pi \times 10^{-5}$ H (D) $2.4\pi \times 10^{-4}$ H

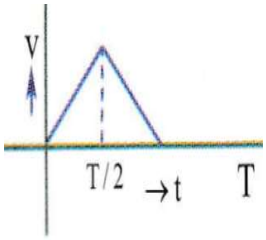
11. The current (I) in the inductance is varying with time according to the plot shown in figure. Which one of the following is the correct variation of voltage with time in the coil?



(A) 

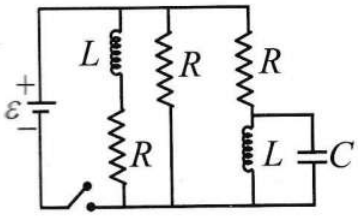
(B) 

(C) 

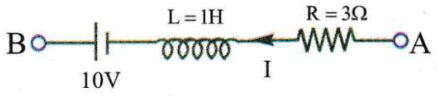
(D) 

12. A long solenoid has 1000 turns. When a current of 4A 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
(A) 2 H (B) 1 H (C) 4 H (D) 3 H

13. Figure shows a circuit that contains three identical resistors with resistance R=9.0Ω each two identical inductors with inductance L = 2.0 mH each, and an ideal battery with emf ε = 18V. The current i through the battery just after the switch closed is
(A) 0.2 A
(B) 4A
(C) 0 ampere
(D) 2 mA



14. In the branch AB of a circuit, as shown in the figure, a current I = (t+2) A is flowing, where t is the time in second. At t=0, the value of $(V_A - V_B)$ will be
(A) 3V (B) –5V
(C) –3V (D) 5V



15. The equivalent inductance of two inductances is 2.4 Henry when connected in parallel and 10 Henry when connected in series. The difference between the two inductances is
(A) 2 Henry (B) 3 Henry (C) 4 Henry (D) 5 Henry

1-A	**2-A**	**3-C**	**4-B**	**5-B**	**6-B**	**7-D**	**8-A**	**9-C**	**10-D**	**11-B**	**12-B**	**13-B**	**14-C**	**15-A**