AIPMT 2006

1. Two coils of self inductances 2 mH and 8 mH are placed so close together that the effective flux in one coil is completely linked with the other. The mutual inductance between these coils is :-

(1) 10 mH (2) 6 mH
(3) 4 mH (4) 16 mH

AIPMT 2007

2. The primary and secondary coils of a transformer have 50 and 1500 turns respectively. If the magnetic flux ϕ linked with the primary coil is given by $\phi = \phi_0 + 4t$, where ϕ is in webers, t is time in seconds and ϕ_0 is a constant, the output voltage across the secondary coil is :

(1) 30 volts (2) 90 volts
(3) 120 volts (4) 220 volts

3. A transformer is used to light a 100 W and 110Vlamp from a 220 V mains. If the main current is0.5 amp, the efficiency of the transformer is approximately :-

(1) 10% (2) 30%
(3) 50% (4) 90%

AIPMT 2008

4. A circular disc of radius 0.2 meter is placed in a uniform magnetic field of $\frac{1}{\pi}$ wb/m^2 in such way that its axis makes an angle of 60° with $\vec{B}$. The magnetic flux linked with the disc is :-

(1) 0.08 wb (2) 0.01 wb
(3) 0.02 wb (4) 0.06 wb

5. A long solenoid has 500 turns. When a current of 2 ampere is passed through it, the resulting magneticflux linked with each turn of the solenoid is 4×10^{-3}wb. The self–inductance of the solenoid is :-

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

AIPMT 2009

6. A rectangular, a square, a circular and an elliptical loop, all in the (x – y) plane, are moving out of a uniform magnetic field with a constant velocity, $\vec{V} = v\hat{i}$. The magnetic field is directed along the negative z axis direction. The induced emf, during the passage of these loops, out of the field region, will not remain constant for :-

(1) any of the four loops
(2) the rectangular, circular and elliptical loops
(3) the circular and the elliptical loops
(4) only the elliptical loop

7. A conducting circular loop is placed in a uniform magnetic field 0.04 T with its plane perpendicular to the magnetic field. The radius of the loop starts shrinking at 2 mm/s. The induced emf in the loop when the radius is 2 cm is :-

(1) 1.6 π μV (2) 3.2 π μV
(3) 4.8 π μV (4) 0.8 π μV

AIPMT (Pre) 2010

8. A conducting circular loop is placed in a uniform magnetic field, B = .025 T with its plane perpendicular to the loop. The radius of the loop is made to shrink at a constant rate of 1 mm s^{-1}. The induced e.m.f. when the radius is 2 cm, is :-

(1) 2 μV (2) $2\pi\mu$V (3) $\pi\mu$V (4) $\frac{\pi}{2}\mu$V

AIPMT (Pre) 2012

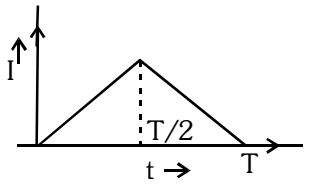
9. A coil of resistance 400Ω is placed in a magnetic field. If the magnetic flux ϕ(Wb) linked with the coil varies with time t (sec) as

$\phi = 50t^2 + 4$.

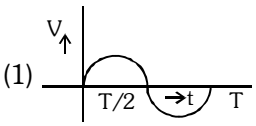
The current in the coil at t = 2 sec is :

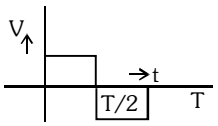
(1) 2A (2) 1A (3) 0.5A (4) 0.1A

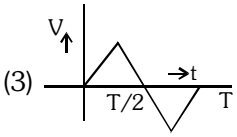
10. The current (I) in the inductance is varying with time according to the plot shown in figure.

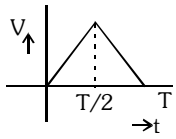


Which one of the following is the correct variation of voltage with time in the coil ?

(1) 

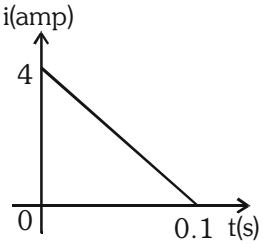
(2) 

(3) 

(4) 

AIPMT (Mains) 2012

11. In a coil of resistance 10 Ω, the induced current developed by changing magnetic flux through it, is shown in figure as a function of time. The magnitude of change in flux through the coil in Weber is:-



(1) 6 (2) 4 (3) 8 (4) 2

NEET-UG 2013

12. A wire loop is rotated in magnetic field. The frequency of change of direction of the induced e.m.f. is :

(1) Six times per revolution

(2) Once per revolution

(3) twice per revolution

(4) four times per revolution

AIPMT 2014

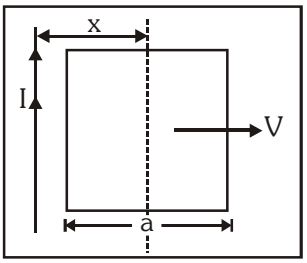
13. A transformer having efficiency of 90% is working on 200V and 3kW power supply. If the current in the secondary coil is 6A, the voltage across the secondary coil and the current in the primary coil respectively are :-

(1) 300 V, 15A (2) 450 V, 15A

(3) 450V, 13.5A (4) 600V, 15A

AIPMT 2015

14. A conducting square frame of side 'a' and a long straight wire carrying current I are located in the same plane as shown in the figure. The frame moves to the right with a constant velocity 'V'. The emf induced in the frame will be proportional to:

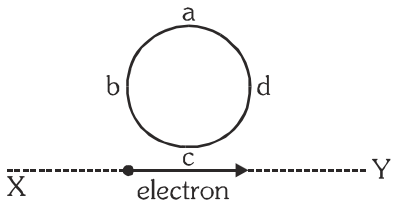


(1) $\frac{1}{(2x-a)^2}$ (2) $\frac{1}{(2x+a)^2}$

(3) $\frac{1}{(2x-a)(2x+a)}$ (4) $\frac{1}{x^2}$

Re-AIPMT 2015

15. An electron moves on a straight line path XY as shown. The abcd is a coil adjacent to the path of electron. What will be the direction of current, if any, induced in the coil ?



(1) No current induced

(2) abcd

(3) adcb

(4) The current will reverse its direction as the electron goes past the coil

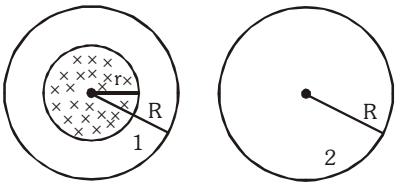
NEET-I 2016

16. 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 :-

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

NEET-II 2016

17. A uniform magnetic field is restricted within a region of radius r. The magnetic field changes with time at a rate $\frac{d\vec{B}}{dt}$. Loop 1 of radius R > r encloses the region r and loop 2 of radius R is outside the region of magnetic field as shown in the figure below. Then the e.m.f. generated is :-



(1) $-\frac{d\vec{B}}{dt}\pi R^2$ in loop 1 and zero in loop 2

(2) $-\frac{d\vec{B}}{dt}\pi r^2$ in loop 1 and zero in loop 2

(3) Zero in loop 1 and zero in loop 2

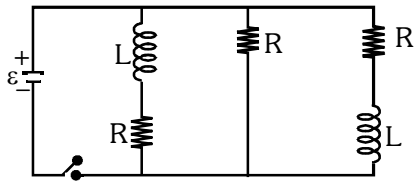
(4) $-\frac{d\vec{B}}{dt}\pi r^2$ in loop 1 and $-\frac{d\vec{B}}{dt}\pi r^2$ in loop 2

NEET(UG) 2017

18. A long solenoid of diameter 0.1 m has 2×10^4 turns per meter. At the centre of the solenoid, a coil of 100 turns and radius 0.01 m is placed with its axis coinciding with the solenoid axis. The current in the solenoid reduces at a constant rate to 0A from 4 A in 0.05 s. If the resistance of the coil is $10\pi^2\Omega$. the total charge flowing through the coil during this time is :-

(1) 16 μC (2) 32 μC
(3) 16 π μC (4) 32 π μC

resistors with resistance R = 9.0 Ω each, two identical inductors with inductance L = 2.0 mH each, and an ideal battery with emf ε = 18 V. The current 'i' through the battery just after the switch closed is,..... :-



(1) 0.2 A (2) 2 A
(3) 0 ampere (4) 2 mA

NEET(UG) 2018

20. The magnetic potential energy stored in a certain inductor is 25 mJ, when the current in the inductor is 60 mA. This inductor is of inductance :-

(1) 0.138 H (2) 138.88 H
(3) 1.389 H (4) 13.89 H

NEET(UG) 2019

21. A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field 5×10^{-5} T. When the plane of the coil is rotated by 90° around any of its coplanar axis in 0.1 s, the emf induced in the coil will be :

(1) 2 V (2) 0.2 V
(3) 2×10^{-3} V (4) 0.02 V

22. In which of the following devices, the eddy current effect is **not** used ?

(1) induction furnace
(2) magnetic braking in train
(3) electromagnet
(4) electric heater

NEET(UG) 2019 (Odisha)

23. A cycle wheel of radius 0.5 m is rotated with constant angular velocity of 10 rad/s in a region of magnetic field of 0.1 T which is perpendicular to the plane of the wheel. The EMF generated between its centre and the rim is,

(1) 0.25 V (2) 0.125 V
(3) 0.5 V (4) zero

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**3**	**3**	**4**	**3**	**1**	**3**	**2**	**3**	**3**	**2**	**4**	**3**	**2**	**3**	**4**
Que.	16	17	18	19	20	21	22	23							
Ans.	**4**	**2**	**2**	**2**	**4**	**4**	**4**	**2**							