

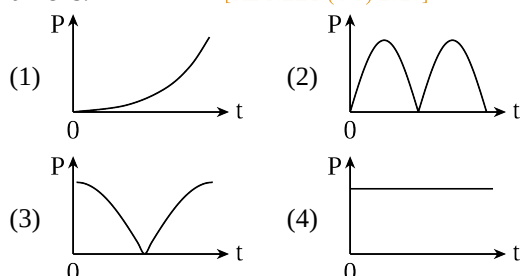
NEET ELECTROMAGNETIC INDUCTION — FARADAY'S LAWS OF INDUCTION — PYQS

Max. Marks: 44

Questions: 11

Section A (MCQ) — 11 questions

- Q.1** A conducting loop of finite resistance lies on the $x - y$ plane. There is a constant magnetic field in the z direction. The area of the loop varies with time t , as $A = A_0(1 + \sin t)$ in appropriate units. The figure that correctly indicates the qualitative behaviour of the power P dissipated in the loop as a function of time is: [RE-NEET (UG) 2026]



Scan or tap for the full solution 

- Q.2** The magnetic flux linked to a circular coil of radius R is $\phi = 2t^3 + 4t^2 + 2t + 5$ Wb. The magnitude of induced emf in the coil at $t = 5$ s is [NEET (UG) 2022 (Phase 2)]
- (1) 192 V (2) 108 V (3) 197 V (4) 150 V

Scan or tap for the full solution 

- Q.3** A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field $5 \times 10^{-5} \text{ T}$. 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 : [NEET (UG) 2019]
- (1) 0.2 V (2) 0.02 V
(3) 2 V (4) $2 \times 10^{-3} \text{ V}$

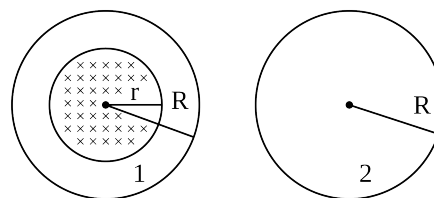
Scan or tap for the full solution 

- Q.4** 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 0 A 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 [NEET 2017]

- (1) $16 \mu\text{C}$ (2) $32 \mu\text{C}$ (3) $16\pi \mu\text{C}$ (4) $32\pi \mu\text{C}$

Scan or tap for the full solution 

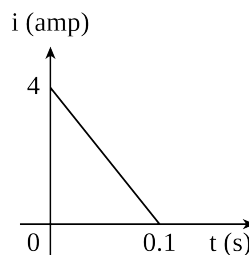
- Q.5** A uniform magnetic field is restricted within a region of radius r . The magnetic field changes with time at a rate $\frac{d\vec{B}}{dt}$. Loop 1 of radius $R > r$ encloses the region r and loop 2 of radius R is outside the region of magnetic field as shown in the figure. Then the e.m.f. generated is [NEET 2016 (Phase 2)]



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

Scan or tap for the full solution 

- Q.6** In a coil of resistance 10Ω , 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 [AIPMT 2012 (Mains)]



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

Scan or tap for the full solution 

- Q.7** A coil of resistance $400\ \Omega$ 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

[AIPMT 2012 (Prelims)]

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

Scan or tap for the
full solution



- Q.8** A conducting circular loop is placed in a uniform magnetic field, $B = 0.025\text{ T}$ with its plane perpendicular to the field. The radius of the loop is made to shrink at a constant rate of 1 mm s^{-1} . The induced emf when the radius is 2 cm, is

[AIPMT 2010 (Prelims)]

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

Scan or tap for the
full solution



- Q.9** 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

[AIPMT 2009]

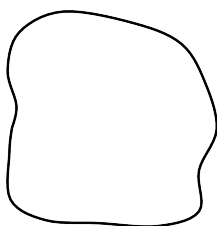
- (1) $4.8\pi\ \mu\text{V}$ (2) $0.8\pi\ \mu\text{V}$ (3) $1.6\pi\ \mu\text{V}$ (4) $3.2\pi\ \mu\text{V}$

Scan or tap for the
full solution



- Q.10** As a result of change in the magnetic flux linked to the closed loop as shown in the figure, an e.m.f. V volt is induced in the loop. The work done (joule) in taking a charge Q coulomb once along the loop is

[AIPMT 2005]



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

Scan or tap for the
full solution



- Q.11** The magnetic flux through a circuit of resistance R changes by an amount $\Delta\phi$ in a time Δt . Then the total quantity of electric charge Q that passes any point in the circuit during the time Δt is represented by

[AIPMT 2004]

- (1) $Q = \frac{1}{R} \cdot \frac{\Delta\phi}{\Delta t}$ (2) $Q = \frac{\Delta\phi}{R}$
(3) $Q = \frac{\Delta\phi}{\Delta t}$ (4) $Q = R \cdot \frac{\Delta\phi}{\Delta t}$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	1	2	2	4	2	1	2	4	1	2