

PHYSICS

81. Magnetic flux through a circuit of resistance R changes by an amount $\Delta\phi$ in a time Δt . Total quantity of electric charge Q that passes any point in the circuit during the time t is represent by

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

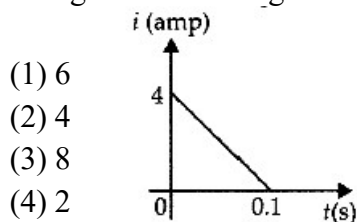
82. The flux linked with a coil at instant 't' is given by $\phi = 10t^2 - 50t + 250$. The induced emf at $t = 3$ s is

- (1) -190 V (2) -10 V
 (3) 10 V (4) 190 V

83. A conducting circular loop is placed in a uniform magnetic field, $B = 0.025$ 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 emf when the radius is 2 cm, is

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

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



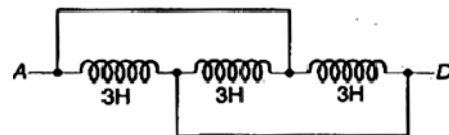
85. A body enters in MRI machine in 10 s. If the magnetic field is 1.5 T and circumference of MRI machine is 0.9 m then find out emf induced in the body.

- (1) 0.96 V (2) 9.6 V
 (3) 9.6 mV (4) 96 mV

86. Current through choke coil increases from zero to 6 A in 0.3 sec and an induced emf of 30 V is produced. Inductance of the coil of choke is

- (1) 2.5 H (2) 5 H
 (3) 1.5 H (4) 2 H

87. The inductance between A and D is



- (1) 3.66 H (2) 9 H
 (3) 0.66 H (4) 1 H

88. In an ideal parallel LC circuit, the capacitor is charged by connecting it to a dc source which is then disconnected. The current in the circuit

- (1) becomes zero instantaneously
 (2) grows monotonically
 (3) decays monotonically
 (4) oscillates instantaneously

89. A copper ring is held horizontally and a bar magnet is dropped through the ring with its length along the axis of the ring. The acceleration of the falling magnet is

- (1) equal to that due to gravity
 (2) less than that due to gravity
 (3) more than that due to gravity
 (4) none of the above

90. Formation of eddy currents has desirable effects in

- (a) Electromagnetic damping
 (b) Transformer
 (c) Inductothermy
 (1) All are correct
 (2) Only (b) is correct
 (3) (a) and (c) are correct
 (4) (b) and (c) are correct