Resonance® Educating for better tomorrow

TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

PHYSICS DPP DAILY PRACTICE PROBLEMS

DPP NO. 2

PHYSICS: EMF

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1. A horizontal overhead powerline is at a height of 4 m from the ground and carries a current of 100 A from east to west. The magnetic field directly below it on the ground is ($\mu_0 = 4\pi \times 10^{-7}$ T mA^{-1}):

(1) 5×10^{-6} T northward (2) 5×10^{-6} T southward

(3) 2.5×10^{-7} T northward (4) 2.5×10^{-7} T southward

2. Gauss is the unit of -

(1) B (2) H (3) M (4) I

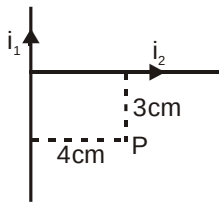
3. A ring of radius r is uniformly charged with charge q. If the ring is rotated with angular frequency ω, then the magnetic induction at its centre will be -

(1) $10^{-7} \times \frac{\omega}{qr}$ (2) $10^{-7} \times \frac{q}{\omega r}$ (3) $10^{-7} \times \frac{r}{q\omega}$ (4) $10^{-7} \times \frac{q\omega}{r}$

4. A current i is flowing in a straight conductor of length L. The magnetic induction at a point distant $\frac{L}{4}$ from its centre will be -

(1) $\frac{4\mu_0 i}{\sqrt{5}\pi L}$ (2) $\frac{\mu_0 i}{2\pi L}$ (3) $\frac{\mu_0 i}{\sqrt{2}L}$ (4) zero

5. Two insulated wires of infinite length are lying mutually at right angles to each other as shown in. Currents of 2A and 1.5A respectively are flowing in them. The value of magnetic induction at point P will be-



(1) 2×10^{-3} N/A-m (2) 2×10^{-5} N/A-m (3) zero (4) 2×10^{-4} N/A-m

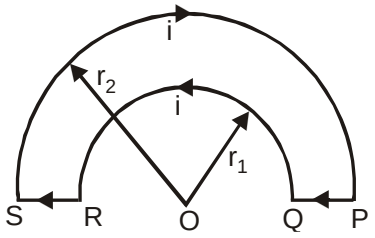
6. An electric current i is flowing in a circular coil of radius a. At what distant from the centre on the axis of the coil will the magnetic field be 1/8th of its value at the centre -

(1) 3 a (2) $\sqrt{3}$ a (3) $\frac{a}{3}$ (4) $\frac{a}{\sqrt{3}}$

7. The ratio of magnetic inductions at the centre of a circular coil of radius a and on its axis at a distance equal to its radius, will be -

(1) $\frac{1}{\sqrt{2}}$ (2) $\frac{\sqrt{2}}{1}$ (3) $\frac{1}{2\sqrt{2}}$ (4) $\frac{2\sqrt{2}}{1}$

8. A wire loop PQRSP is constructed by joining two semi circular coils of radii r_1 and r_2 respectively as shown in the fig. Current i is flowing in the loop. The magnetic induction at point O will be -



(1) $\frac{\mu_0 i}{4}\left[\frac{1}{r_1}-\frac{1}{r_2}\right]$ (2) $\frac{\mu_0 i}{4}\left[\frac{1}{r_1}+\frac{1}{r_2}\right]$ (3) $\frac{\mu_0 i}{2}\left[\frac{1}{r_1}-\frac{1}{r_2}\right]$ (4) $\frac{\mu_0 i}{2}\left[\frac{1}{r_1}+\frac{1}{r_2}\right]$

9. The use of Helmholtz coils is to produce -

(1) uniform magnetic field (2) non-uniform magnetic field
(3) varying magnetic field (4) zero magnetic field

10. If the magnetic flux is expressed in weber, then magnetic induction can be expressed in

(1) Weber/m^2 (2) Weber/m (3) Weber-m (4) Weber-m^2