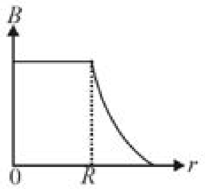
Ultimate KCET Crash Course 2026

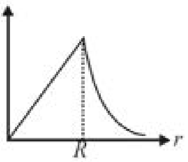
PHYSICS

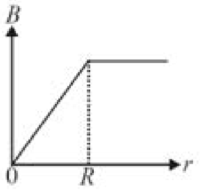
Moving charges and Magnetism

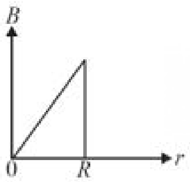
DPP: 2

Q1 The correct plot of the magnitude of magnetic field $\vec{B}$ vs distance r from centre of the wire is, if the radius of wire is R:

(A) 

(B) 

(C) 

(D) 

Q2 An electron having mass 9×10^{-31}kg, charge 1.6 $\times10^{-19}$ C and moving with a velocity of 10^{6} m/s enters a region where magnetic field exists. If it describes a circle of radius 0.10 m, the intensity of magnetic field must be

(A) 1.8×10^{-4} T

(B) 5.6×10^{-5} T

(C) 14.4×10^{-5} T

(D) 1.3×10^{-6} T

Q3 The magnetic field at the centre of a circular current carrying conductor of radius r is B_c. The magnetic field on its axis at a distance r from the centre is B_a. The value of B_c: B_a will be:

(A) $1:\sqrt{2}$
(B) $1:2\sqrt{2}$
(C) $2\sqrt{2}:1$
(D) $\sqrt{2}:1$

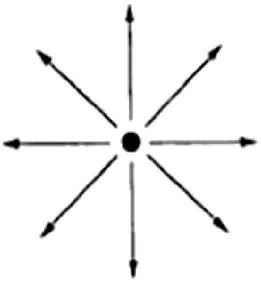
Q4 A current i flows along an infinitely long straight conductor. If 'r' is the perpendicular distance of a point from the lower end of the conductor, then the magnetic induction B is given by:

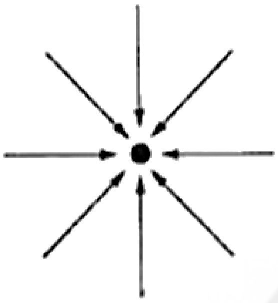
(A) $B=\frac{\mu_0}{4\pi}\frac{2i}{r}$
(B) $B=\frac{\mu_0}{4\pi}\frac{i}{r}$
(C) $B=\frac{\mu_0}{4\pi}\frac{\pi i}{r}$
(D) $B=\frac{\mu_0}{4\pi}\frac{2\pi i}{r}$

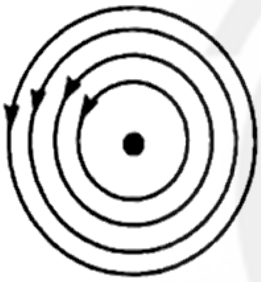
Q5 The deflection in a moving coil galvanometer falls from 50 divisions to 10 divisions when a shunt of 10Ω is connected with it. The resistance of galvanometer coil is

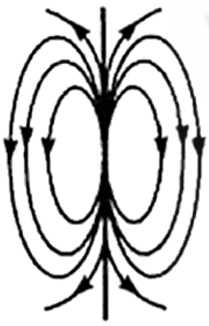
(A) 10Ω
(B) 40Ω
(C) 50Ω
(D) 48Ω

Q6 Which of the field patterns given in the figure is valid for electric field as well as for magnetic field?

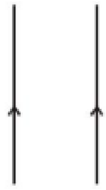

(A)


(B)

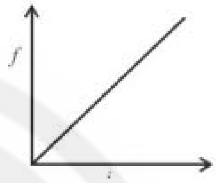

(C)

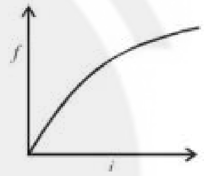

(D)

Q7 The figure shows two long straight current carrying wire separated by a fixed distance d. The magnitude of current, flowing in each wire varies with time but the magnitude of current in each wire is equal at all times.

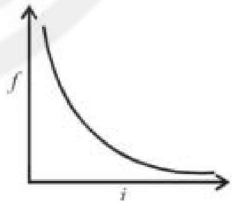


Which of the following graphs shows the correct variation of force per unit length f between the two wires with current i?


(A)


(B)


(C)


(D)

Q8 In a moving coil galvanometer the deflection (ϕ) on the scale by a pointer attached to the spring is:-

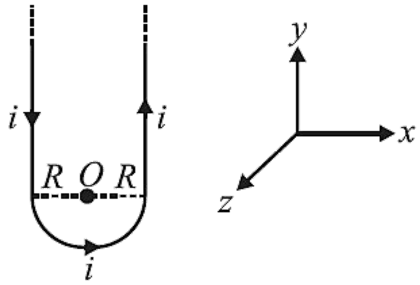
(A) $\left(\frac{NA}{kB}\right) I$

(B) $\left(\frac{N}{kAB}\right) I$

(C) $\left(\frac{NAB}{k}\right) I$

(D) $\left(\frac{NAB}{kI}\right)$

Q9 The magnetic induction at the centre *O* in the figure shown is:



(A) Zero

(B) $\left(\frac{\mu_o i}{4\pi R} + \frac{\mu_o i}{4R}\right)\hat{k}$

(C) $\left(\frac{\mu_o i}{2\pi R} + \frac{\mu_o i}{2R}\right)\hat{k}$

(D) $\left(\frac{\mu_o i}{2\pi R} + \frac{\mu_o i}{4R}\right)\hat{k}$

Q10 A piece of wire carrying a current of $6.00\ \mathrm{A}$ is bent in the form of a circular arc of radius $10.0\ \mathrm{cm}$, and it subtends an angle of $120°$ at the centre. Find the magnetic field B due to this piece of wire at the centre.

(A) zero

(B) $1.26 \times 10^{-5}\ \mathrm{T}$

(C) $5 \times 10^{-5}\ \mathrm{T}$

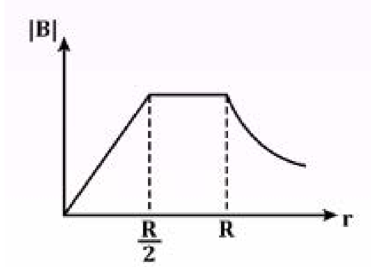
(D) $7.2 \times 10^{-5}\ \mathrm{T}$

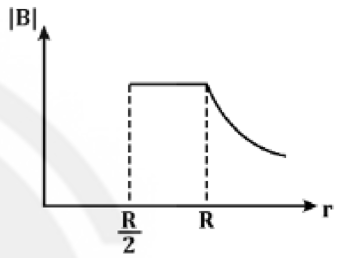
Q11 A solenoid of cross-sectional area $2 \times 10^{-4}\ \mathrm{m}^2$ and 900 turns has 0.6 Am^2 magnetic moment. Then the current flowing through it is

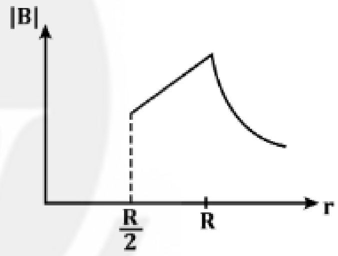
(A) 2.24 A (B) 2.34 mA

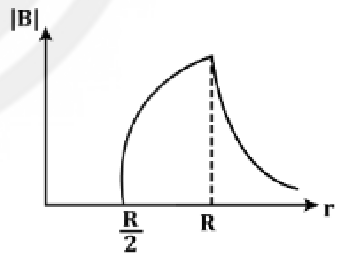
(C) 3.33 A (D) 3.33 mA

Q12 An infinitely long hollow conducting cylinder with inner radius $\mathrm{R}/2$ and outer radius R carries a uniform current density along is length. The magnitude of the magnetic field, $|\vec{\mathbf{B}}$ as a function of the radial distance r from the axis is best represented by :

(A)


(B)


(C)


(D)


Q13 What is the torque experienced by a circular loop with a circumference L and 1 turn. Which is suspended in a magnetic field B and current I passes through it

(A) $\left(\frac{1}{4\pi}\right)BIL$ (B) $\left(\frac{1}{4\pi}\right)BIL^2$

(C) $\left(\frac{1}{4\pi}\right)B^2IL$ (D) $\left(\frac{1}{4\pi}\right)BI^2L$

Q14 A toroidal solenoid has 3000 turns and a mean radius of 10 cm. It has a soft iron core of relative permeability 2000. Find the magnetic field in the core when a current of 1.0A is passed through the solenoid.

(A) 20 T (B) 12 T
(C) 6 T (D) 3 T

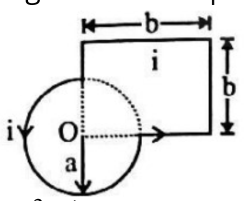
Q15 The electric current in a circular coil of 2 turns produces a magnetic induction B_1 at its centre. The coil is unwound and is rewound into circular coil of 5 turns and the same current produces a magnetic induction B_2 at its centre.The ratio of $\frac{B_2}{B_1}$ is :

(A) $\frac{5}{2}$ (B) $\frac{25}{4}$
(C) $\frac{5}{4}$ (D) $\frac{25}{2}$

Q16 A current carrying circular loop of radius *R*' and current carrying long straight wire are placed in the same plane. I_c and I_w are the currents through circular loop and long straight wire respectively. The perpendicular distance between centre of the circular loop and wire is '*d*'. The magnetic field at the centre of the loop will be zero when separation *d*' is equal to

(A) $\frac{RI_w}{\pi I_c}$ (B) $\frac{RI_c}{\pi I_w}$
(C) $\frac{\pi I_c}{RI_w}$ (D) $\frac{\pi I_w}{R_c}$

Q17 Evaluate the magnitude and direction of magnetic field at point O.



(A) $\frac{3\mu_o i}{8a}, \odot$
(B) $\frac{\mu_o i}{2\sqrt{2}b}, \odot$
(C) $\frac{3\mu_o i}{8a} + \frac{\mu_o i}{2\sqrt{2}b}, \odot$
(D) $\frac{3\mu_o i}{a} + \frac{\mu_o i}{2\sqrt{2}b}, \odot$

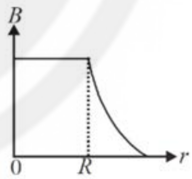
Q18 Two long straight parallel conductors A and B carrying currents 4.5 A and 8 A respectively, are separated by 25 cm in air. The resultant magnetic field at a point which is at a distance of 15 cm from conductor A and 20 cm from conductor B is

(A) 2×10^{-5} N
(B) 2×10^{-4} N
(C) 10^{-5} N
(D) 10^{-4} N

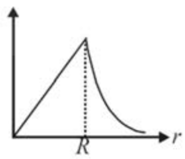
Q19 Two circular coils A and B of radius $\frac{5}{\sqrt{2}}$ cm and 5 cm carry currents 5 A and $5\sqrt{2}$ A, respectively. The plane of B is perpendicular to plane of A and their centres coincide. Magnetic field at the centre is

(A) 0
(B) $4\pi\sqrt{2} \times 10^{-5}$ T
(C) $4\pi \times 10^{-5}$ T
(D) $2\pi\sqrt{2} \times 10^{-5}$ T

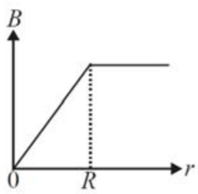
Q20 The correct plot of the magnitude of magnetic field $\vec{B}$ vs distance r from centre of the wire is, if the radius of wire is R



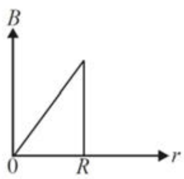
(A)



(B)



(C)



(D)

Q21 Current sensitivity of a moving coil galvanometer is 5div/mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20div/V. The resistance of the galvanometer is

(A) 40 Ω (B) 25Ω

(C) 250Ω (D) 500Ω

Q22 A solid cylindrical wire of radius R carries I. The magnetic field is $5\mu T$ at a point, which is 2R distance away from the axis of wire. Magnetic field at a point which is $R/3$ distance inside from the surface of the wire is-

(A) $\frac{10}{3}\mu T$

(B) $\frac{20}{3}\mu T$

(C) $\frac{5}{3}\mu T$

(D) $\frac{40}{3}\mu T$

Q23 The value of $\oint \vec{B} \cdot d\vec{\ell}$ for the loop as show in the figure will be:

(A) $2\mu_o i$ (B) $3\mu_o i$

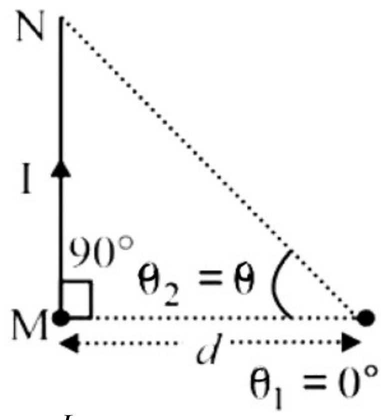
(C) $\mu_o i$ (D) $5\mu_o i$

Q24 If the resistance of the upperhalf of a rigid loop is twice that of the lower half, the magnitude of magnetic induction at the centre is equal to

(A) Zero (B) $\frac{\mu_0 I}{4a}$

(C) $\frac{\mu_0 I}{12a}$ (D) $\frac{\mu_0 I}{3a}$

Q25 Find magnetic field due to finite length wire at point '*P*'.



(A) $\frac{\mu_o I}{8\pi d}\sin\theta$

(B) $\frac{\mu_o I}{6\pi d}\sin\theta$

(C) $\frac{\mu_o I}{7\pi d}\sin\theta$

(D) $\frac{\mu_o I}{4\pi d}\sin\theta$

Q26 If same current I passing through two parallel wires separated by a distance b, then force per unit length will be

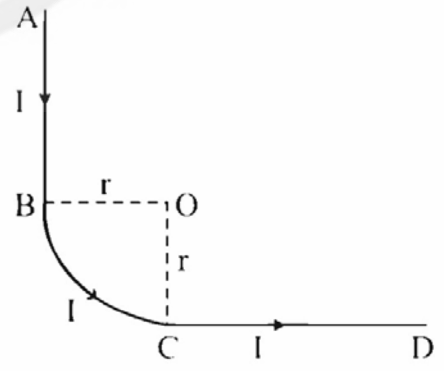
(A) $\frac{\mu_o}{4\pi}\frac{2I^2}{b}$

(B) $\frac{\mu_o I}{4\pi b^2}$

(C) $\frac{\mu_o I^2}{4\pi b^2}$

(D) $\frac{\mu_o I^2}{4\pi b}$

Q27 The magnitude of magnetic field at point 'O' in the following figure will be



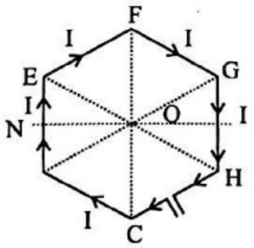
(A) $\frac{\mu_o}{4\pi}\frac{I}{r}\left(\frac{2}{\pi}+2\right)$

(B) $\frac{\mu_o}{4\pi}\frac{I}{r}\left(\frac{2}{\pi}-2\right)$

(C) $\frac{\mu_o}{4\pi}\frac{I}{r}\left(2+\frac{\pi}{2}\right)$

(D) $\frac{\mu_o}{4\pi}\frac{I}{r}\left(2-\frac{\pi}{2}\right)$

Q28 A current is flowing in a hexagonal coil of side a shown in figure. Find the magnetic field induction at the center of the coil.



(A) $\frac{\sqrt{2}\mu_o I}{\pi a}$

(B) $\frac{\sqrt{3}\mu_o I}{\pi a}$

(C) $\frac{\pi a}{\sqrt{3}I}$

(D) $\frac{\mu_o I}{\pi a}$

Q29 If the number of turns in a moving coil galvanometer of current sensitivity C and voltage sensitivity V is doubled, then

(A) C remains unchanged and V is doubled

(B) Both C and V are halved

(C) Both C and V are doubled

(D) C is doubled and V remains unchanged

Q30 **A long straight wire of radius a carries a steady current I. The current is uniformly distributed across its cross section. What is the ratio of the magnetic field at *a*/2 that at 2a ?**

(A) 4 (B) 2

(C) 1 (D) 1/2

Q31 If the same current *I* is passing through two parallel wires separated by a distance *b*, then the force per unit length will be

(A) $\frac{\mu_o I^2}{4\pi b}$

(B) $\frac{\mu_o}{4\pi b^2} \frac{2I^2}{b}$

(C) $\frac{\mu_o I}{4\pi b^2}$

(D) $\frac{\mu_o I^2}{4\pi b^2}$

Answer Key

Q1	B
Q2	B
Q3	C
Q4	B
Q5	B
Q6	C
Q7	C
Q8	C
Q9	D
Q10	B
Q11	C
Q12	D
Q13	B
Q14	B
Q15	B
Q16	A
Q17	C
Q18	C
Q19	C
Q20	B
Q21	C
Q22	B
Q23	B
Q24	C
Q25	D
Q26	A
Q27	C
Q28	B
Q29	D
Q30	C
Q31	B

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

(B)

The magnetic field from the centre of wire of radius R is given by

$B = \left(\frac{\mu_0 I}{\pi R^2}\right) r \left(r < R\right) \Rightarrow B \propto r$

and $B = \frac{\mu_0 I}{2\pi r} r \left(r > R\right) \Rightarrow B \propto \frac{1}{r}$

From the above descriptions, we can say that the graph (B) is a correct representation.

Video Solution:

Q2 Text Solution:

5.6×10^{-5} T

Video Solution:

Q3 Text Solution:

(C)

$B_c = \frac{\mu_0 I}{2r}$

$B_a = \frac{\mu_0 r^2 I}{2\left(r^2+x^2\right)^{3/2}}$

Given: $x = r$,

$\therefore B_a = \frac{\mu_0 r^2 I}{2\left(2r^2\right)^{3/2}} = \frac{\mu_0 i}{2r}\left(\frac{1}{2\sqrt{2}}\right)$

$\frac{B_c}{B_a} = \frac{2\sqrt{2}}{1}$

Video Solution:

Q4 Text Solution:

(B)

Magnetic field due to semi-infinite wire = $\frac{\mu_0 i}{4\pi r}$

$B = \frac{\mu_0 i}{4\pi r}\left[\sin\left(90^\circ\right) + \sin\left(0^\circ\right)\right]$

$= \frac{\mu_0 i}{4\pi r}$

[New NCERT Class 12th Page No. 143]

Video Solution:

Q5 Text Solution:

Let the current for one division of galvanometer be i

Current through the galvanometer $I_g = 10_i$

Current through the ammeter I = 50i

$$S = \frac{I_g D}{(I - I_g)} \Rightarrow G = S\left(\frac{I - I_g}{I_g}\right)$$

$$G = 10 \times \left[\frac{50i - 10i}{10i}\right] = 10 \times \left(\frac{40i}{10i}\right) = 40\Omega$$

$$\Rightarrow G = 40\Omega$$

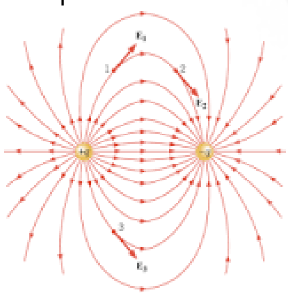
Video Solution:

Q6 Text Solution:

In A and B the field lines are outward and inward due to a stationary point charge and magnetic field lines always form close loop ,

in option D , it may look like it is electric field due to electric dipole but here all lines are merged into single lines thats why it can not be electric field lines

so option C is correct



⇒electric field due to dipoles

Video Solution:

Q7 Video Solution:

Q8 Text Solution:

torque = NIAB = K

Video Solution:

Q9 Text Solution:

$$\vec{B}_{net} = \vec{B}_1 + \vec{B}_2 + \vec{B}_3$$

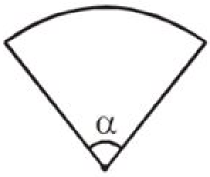
$$\vec{B}_{net} = \frac{\mu_0 i}{4\pi R}\left(\hat{k}\right) + \frac{\mu_0 i}{4R}\left(\hat{k}\right) + \frac{\mu_0 i}{4\pi R}\left(\hat{k}\right)$$

Video Solution:

Q10 Text Solution:

Magnetic field due to arc

$$= \frac{\mu_0 i}{4\pi R}(\alpha) = \frac{10^{-7} \times 6}{10 \times 10^{-2}} \times \frac{2\pi}{3}$$
$$= 4\pi \times 10^{-6} \text{ T}$$
$$= 1.26 \times 10^{-5} \text{ T}$$



Video Solution:

Q11 Text Solution:

Here, N=900 turns, A = 2 × 10^{-4} m^2, m_S = 0.6Am^2 .

The magnetic moment of solenoid

m_S = NIA

The current flowing through the solenoid is

$$I = \frac{m_s}{NA} = \frac{0.6}{900 \times 2 \times 10^{-4}} = 3.33 \text{ A}$$

Video Solution:

Q12 Video Solution:

Q13 Video Solution:

Q14 Text Solution:

(B)

$$B = \frac{\mu N i}{2\pi r} = \mu_0 \mu_r \frac{Ni}{2\pi r}$$
$$= \frac{4\pi \times 10^{-7} \times 2000 \times 3000 \times 1}{2\pi \times 0.1}$$
= 12 T

[Old NCERT Class 12th Page No. 150]

Video Solution:

Q15 Video Solution:

Q16 Text Solution:

The magnetic field at the center of a current-carrying circular loop is given by

$B_{loop} = \frac{\mu_o I_c}{2R}$

Where I_c the current in the loop, R is the radius of the loop, and μ_o is the permeability of free space

where I_W is the current in the wire and d is the distance from the wire to the point of interest

$B_{wire} = \frac{\mu_o I_w}{2\pi d}$

For the magnetic field at the center of the loop to be zero, these fields must be equal in magnitude

Canceling μ_o and simplifying, we get:

$\frac{I_c}{R} = \frac{I_w}{\pi d}$

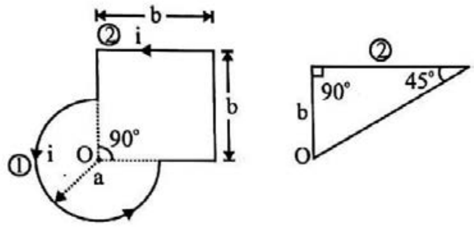
Solving for d,

$d = \frac{\pi R I_w}{I_c}$

Therefore, the separation d that makes the magnetic field at the center of the loop zero is given by:

Video Solution:

Q17 Text Solution:



Magnetic Field, $B_1 = \frac{\mu_o i}{2a} \cdot \frac{3}{4} = \frac{\mu_o i}{2a} \cdot \frac{3}{4}$

$= \frac{3\mu_o i}{8a} \odot$

Magnetic field, B_2

$= \frac{\mu_o i}{4\pi b}(\cos 90° + \cos 45°) = \frac{\mu_o i}{4\sqrt{2}\pi b} = B_3 \odot$

Mgnetic field at the centre O,

$B_o = B_1 + (B_2 + B_3) = \frac{3\mu_o i}{8a} + \frac{\mu_o i}{2\sqrt{2}b}, \odot$

Video Solution:

Q18 Video Solution:

Q19 Text Solution:

Given $r_1 = \frac{5}{\sqrt{2}} \times 10^{-2}$ m

$r_2 = 5 \times 10^{-2}$ m

$I_1 = 5$ A

$I_2 = 5\sqrt{2}$ A

We know that for circular coil magnetic field at the center is $\frac{\mu_0 I}{2r}$

$\therefore B_1 = \frac{\mu_0 I_1}{2r_1} = \frac{\mu_0 \cdot 5}{2\frac{5}{\sqrt{2}}} \cdot 10^2$ T

$\therefore B_2 = \frac{\mu_0 I_2}{2r_2} = \frac{\mu_0 \cdot 5\sqrt{2}}{2 \cdot 5} \cdot 10^2$ T

$B_1 = B_2 = \frac{100\mu_0}{\sqrt{2}}$ T

Therefore, $B_{\text{net}} = \sqrt{2} \cdot \frac{100\mu_0}{\sqrt{2}}$, since two planes are perpendicular

Therefore, $B_{\text{net}} = 4\pi \times 10^{-5}$ T

Hence option C is correct.

Video Solution:

Q20 Text Solution:

The magnetic field from the centre of wire of radius R is given by

$$B = \left(\frac{\mu_0 I}{2R^2}\right) r(r < R) \Rightarrow B \propto r$$

and $B = \frac{\mu_0 I}{2\pi r} r(r > R) \Rightarrow B \propto \frac{1}{r}$

From the above descriptions, we can say that the graph (2) is a correct representation.

Video Solution:

Q21 Text Solution:

Current sensitivity, $I_s = 5div/mA$

Voltage sensitivity, $V_s = 20div/V$

$V_s = I_s/R$

Video Solution:

Q22 Text Solution:

As we know that, the Radius of the wire is R

Current in wire is I

Magnetic field at the distance r=2R is, B=5μT

By Ampere's Circular Law,

$\oint B.dl = u_0.I$

B.2πr=u_0.I

B=$\frac{u_0 I}{2\pi.2R}$

5=$\frac{u_0 I}{4\pi R}$

$\frac{20\pi}{u_0} = \frac{I}{R}$

Magnetic field at the point which is $R/3$ distance inside from the surface of the wire

So, r=R - $R/3$

r=$2R/3$

$B_s = \frac{1}{2}u_0.J_r$ (where J=$\frac{I}{\pi R^2}$)

$B_s = \frac{1}{2}u_0\frac{I}{\pi R^2}.\frac{2R}{3}$

$B_s = \frac{20}{3}\mu T$

Video Solution:

Q23 Text Solution:

$\int \vec{B} \cdot d\vec{\ell} = \mu_0 I_{\text{inside}} = \mu_0\left(4i - i\right) = 3\mu_0 i$

Video Solution:

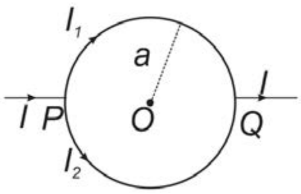
Q24 Text Solution:

$\because I_1 R_1 = I_2 R_2$

$\frac{I_1}{I_2} = \frac{R_2}{R_1} = \frac{R_2}{2R_2} = \frac{1}{2}$

$\therefore I_2 = 2I_1$

$\therefore$ and $I = I_1 + I_2 = I_1 + 2I_1 = 3I_1$



Nagnetic field at the centre of coil is

$$\vec{B}_0 = B_1 \otimes + B_2 \odot$$

$$B_O = -\frac{\mu_0 I_1 \pi}{4\pi a} + \frac{\mu_0 I_2 \pi}{4\pi a}$$

$$B_0 = \frac{\mu_0 \pi}{4\pi a}(I_2 - I_1) = \frac{\mu_0}{4a}\left(\frac{2}{3}I - \frac{I}{3}\right) = \frac{\mu_0}{4a}\left(\frac{I}{3}\right)$$

$$= \frac{\mu_0 I}{12a}$$

Video Solution:

Q25 Text Solution:

we know magnetic field due to current carrying wire is

$$B = \frac{\mu_o I}{4\pi d}\left(\sin\theta_2 + \sin\theta_1\right)$$

put $\theta_1 = 0$ *and* $\theta_2 = \theta$

we get

$$B = \frac{\mu_o I}{4\pi d}\left(\sin\theta + 0\right) \quad \Rightarrow \quad B = \frac{\mu_o I}{4\pi d}\sin\theta$$

Video Solution:

Q26 Text Solution:

Force per unit lenght between two parallel current carrying wires separated by adistance b

$$= \frac{\mu_0}{4\pi}\frac{2I_1 I_2}{b} = \frac{\mu_0}{4\pi}\frac{2I^2}{b}(\because I_1 = I_2 = I)$$

Video Solution:

Q27 Text Solution:

Magnetic field due to current carrying arc is

$$B = \frac{\mu_0 I}{4\pi r} \times \theta = \frac{\mu_0 I}{4\pi r} \times \frac{\pi}{2} = \frac{\mu_0 I}{8r}$$

Magnetic field due to semi-infinite current carrying straight wires AB and CD is

$$\frac{2\mu_0 I}{4\pi r} = \frac{\mu_0 I}{2\pi r}$$

Total Magnetic field at 'O' will be

$$\frac{\mu_0 I}{2\pi r} + \frac{\mu_0 I}{8r} = \frac{\mu_0 I}{2r}\left(\frac{1}{\pi} + \frac{1}{4}\right)$$

$$= \frac{\mu_0}{4\pi}\frac{1}{r}\left(\frac{2\pi}{\pi} + \frac{2\pi}{4}\right)$$

$$= \frac{\mu_0}{4\pi}\frac{1}{r}\left(2 + \frac{\pi}{2}\right)$$

Video Solution:

Q28 **Text Solution:**

Here

$\angle EOD = 60^\circ$

$\angle EON = 30^\circ = \angle NOD$

$OE = OD = ED = a$

$ON = OE\cos 30^\circ = a \times \frac{\sqrt{3}}{2}$

Total magnetic field induction at O due to current through all the six sides of hexagonal is

$B = 6 \times \frac{\mu_o}{4\pi} \times \frac{I}{a\frac{\sqrt{3}}{2}}(\sin 30^\circ + \sin 30^\circ) \Rightarrow B$

$= \frac{\sqrt{3}\mu_o I}{\pi a}$

Video Solution:

Q29 **Text Solution:**

Current sentsitivity, $C = \frac{NAB}{k}$

Voltage sensitivity, $V = \left(\frac{NAB}{k}\right)\frac{1}{R}$

If N

$\rightarrow 2N$ i.e., double the number of turns, then C

$\rightarrow 2C$

Thus, the current sensitivity doubles.

If $N \rightarrow 2N$, then $R \rightarrow 2R \quad \therefore V \rightarrow V$

Thus, the voltage sensitivity remains unchanged.

Video Solution:

Q30 **Text Solution:**

Magnetic field due to a long staright wire of radius a carring a current I at a popint distant r from the as of the wire is given by

$B_{\text{inside}} = \frac{\mu_0 Ir}{2\pi a^2} \left(r < a\right) \qquad r = \frac{a}{2} is$

$B_{\text{outside}} = \frac{\mu_0 I}{2\pi r} \left(r > a\right)$

The magnetic field at a distance

$B_1 = \frac{\mu_0 I(a/2)}{2\pi a^2} = \frac{\mu_0 I}{4\pi a}$

The magnetic field at a sitance r = 2 a is

$B_2 = \frac{\mu_0 I}{2\pi(2a)} = \frac{\mu_0 I}{4\pi a}$

Their ratio is

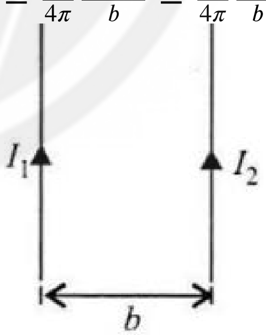
$\frac{B_1}{B_2} = 1$

Video Solution:

Q31 **Text Solution:**

Force per unit length between two parallel current carrying wires separated by a distance b

$= \frac{\mu_0}{4\pi}\frac{2I_1 I_2}{b} = \frac{\mu_0}{4\pi}\frac{2I^2}{b}(\because I_1 = I_2 = I)$



Video Solution: