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EdLoop EAPCET

PHYSICS · EAPCET (EAMCET)

Magnetic Effects of Current

Previous Year Questions with answers

285 questions · **147** papers · **2010–2026** · newest paper first

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What is in this PDF: every Magnetic Effects of Current question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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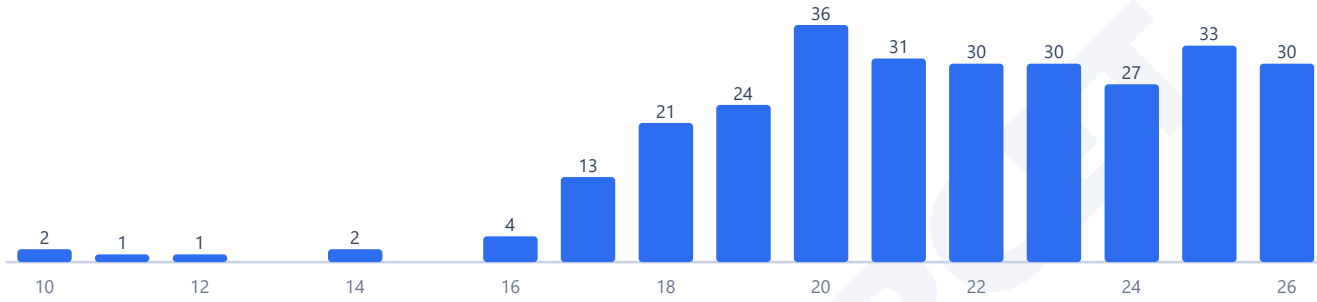
Chapter at a glance

4.9%	285	77 of 77	285 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 2 questions per paper in 2024–2026 against 1.9 in 2022–2023.

Questions per year



Counts are the questions we hold: 285 in 147 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Magnetic Field due to Current	140
Force on Charges & Currents	98
Current Loops & Galvanometer	47

How often it comes up

Magnetic Effects of Current ranks as the third largest chapter in the physics curriculum for Class 12. Across the AP and TS EAPCET papers held in our archive between 2022 and 2026, the chapter contributed 150 questions across 77 papers. That yields an average rate of 1.9 questions per paper, making up 4.9% of all physics questions in that recent window. Taking in all years in our archive from 2010 to 2026, Magnetic Effects of Current provided 285 questions across 149 papers, maintaining an average of 1.9 questions per paper and a 4.8% subject share. Across the earlier testing period from 2010 to 2021, our archive records 135 questions across 72 papers (4.7% share). In the last three exam years from 2024 to 2026, the chapter delivered 90 questions across 46 papers, registering a 4.9% share. Comparing the last three years to early papers, the chapter's share of the subject is about the same, and compared to the recent five-year window it is also about the same.

State-wise breakdowns show very similar emphasis across regional papers. AP EAPCET papers between 2022 and 2026 contributed 92 questions across 48 papers in our set (1.9 per paper, 4.8% share). TS EAPCET contributed 58 questions across 29 papers in our set (2.0 per paper, 5.0% share). Magnetic Effects of Current has appeared every year since 2022 and was asked in every single paper across both states in the recent five-year window. The chapter ranks 3rd of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2020, which delivered 36 questions across 18 papers.

Most-asked topics

Questions fall into three major areas:

- **Magnetic Field due to Current**: This leading section brought 69 questions between 2022 and 2026, out of 140 questions across all years in our archive. It tests the Biot-Savart law, circular loops, axial fields, straight conductors of finite or infinite length, Ampere's circuital law, and ideal solenoids or toroids.

- **Force on Charges & Currents**: Recent examinations contributed 57 questions, out of 98 questions in the complete record. Key topics cover the Lorentz force F = q (v × B), helical particle orbits, velocity selectors, forces between parallel currents, and magnetic force on arbitrary wire geometries.
- **Current Loops & Galvanometer**: A group of 24 questions appeared in the recent five-year span, out of 47 questions overall. It tests magnetic dipole moments of planar coils, torque τ = M × B, potential energy of loops, moving coil galvanometers, and sensitivity conversions.

What the questions look like

Biot-Savart field superpositions provide a constant source of numerical problems. A classic question presents a wire carrying current bent into circular arcs, semicircles, or polygons (such as squares or regular hexagons) with straight leads, asking students to calculate the net magnetic induction vector at the geometric center. Another standard setup examines an atomic electron or orbiting charged particle, asking for the equivalent orbital magnetic field generated at the orbit center.

Force and trajectory problems form the other main pillar. Examiners frequently project a charged particle into a uniform magnetic field at an oblique angle θ, asking for the radius of curvature, orbital time period, or the axial pitch of the resulting helix. Moving coil galvanometer problems test conversion into multi-range ammeters or voltmeters using series multipliers or parallel shunts, or evaluate torque on rectangular and hexagonal current loops placed in uniform magnetic fields.

How to practise it

Start by mastering field formulas from the Biot-Savart law. For a circular loop of radius R carrying current I, the on-axis magnetic field at distance x from the center is B = μ_zero I R^2 / [two $(R^2 + x^2)$^(3/2)]. At the center where x = zero, this simplifies to B = μ_zero I / (two R). For an arc subtending angle θ radians at its center, B = μ_zero I θ / (four π R). For an infinitely long straight wire at perpendicular distance d, B = μ_zero I / (two π d).

Next, master the dynamics of charges in magnetic fields. The magnetic Lorentz force is F = q (v × B). When velocity v is perpendicular to uniform field B, the charge traces a circle of radius r = m v / (q B) = p / (q B) = √(two m K) / (q B). The period T = two π m / (q B) is notably independent of speed and radius. When velocity makes angle θ with field lines, the perpendicular component v sin θ provides circular motion while the parallel component v cos θ provides axial drift, giving helical pitch p = v cos θ × T = (two π m v cos θ) / (q B).

Finally, study forces on conductors and current loops. The force on a straight segment of length L carrying current I is F = I (L × B). The magnetic moment of a planar loop of N turns enclosing area A is M = N I A. The torque on the dipole is τ = M × B = M B sin θ, and its potential energy is U = - M · B = - M B cos θ.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A charged particle is moving parallel to a uniform magnetic field. Then the force on the charged particle

(A) qvB
(B) $\frac{B}{qv}$
(C) $\frac{v^2B}{q}$
(D) zero

Answer: (D) zero · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A toroid of 1000 turns has average radius of $\frac{\mu_0}{\pi}$ metre. If $1\,A$ current is flowing through it, then the magnetic field intensity inside the coil of the toroid is

(A) $500\,T$
(B) $100\,T$
(C) $750\,T$
(D) $1000\,T$

Answer: (A) $500\,T$ · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A circular coil connected to a battery of emf E produced a magnetic field at its centre. The coil is unwound, stretched to double its length and rewound into a coil of $\left(\frac{1}{3}\right)^{rd}$ of its initial radius. If this coil is connected to a battery of emf E' to produce same magnetic field at its centre, then E' is

(A) $\frac{2E}{9}$
(B) $\frac{3E}{7}$
(C) $\frac{9E}{4}$
(D) $\frac{E}{6}$

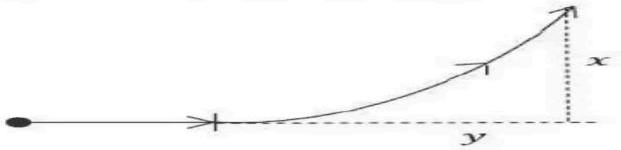
Answer: (A) $\frac{2E}{9}$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A particle having charge 'q' enters a uniform transverse magnetic field $\vec{B}$. It is deflected through a distance 'x' while travelling a distance 'y' as shown in figure. The magnitude of the momentum of the particle is

(see the figure above)

A particle having charge 'q' enters a uniform transverse magnetic field $\vec{B}$. It is deflected through a distance 'x' while travelling a distance 'y' as shown in figure. The magnitude of the momentum of the particle is



విద్యుదావేశం 'q' గల ఒక కణము ఏకరీతి తిర్యక్ అయస్కాంత క్షేత్రంలోనికి ప్రవేశించినది. అది పటములో చూపినట్లు 'y' దూరం ప్రయాణించేలోపు 'x' దూరం విచలనం చెందినది. ఆ కణ ద్రవ్యవేగ పరిమాణము

Options :

1. $\frac{qB}{2}[y^2+x^2]$
2. $\frac{qBy^2}{x}$
3. $\frac{qB}{2}\left[\frac{y^2}{x}+x\right]$
4. $\frac{qBy^2}{2x}$

(A) $\frac{qB}{2}\left[y^2+x^2\right]$
(B) $\frac{qBy^2}{x}$
(C) $\frac{qB}{2}\left[\frac{y^2}{x}+x\right]$
(D) $\frac{qBy^2}{2x}$

Answer: (C) $\frac{qB}{2}\left[\frac{y^2}{x}+x\right]$ · The council's preliminary key

Q5 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A current carrying circular coil of radius 'r' produces a magnetic induction of $1\,T$ at its centre. The magnetic induction at a distance of $\sqrt{3}\,r$ on its axis from its centre is

(A) $\frac{1}{8}\,T$
(B) $\frac{1}{16}\,T$
(C) $\frac{1}{4}\,T$
(D) $\frac{1}{12}\,T$

Answer: (A) $\frac{1}{8}\,T$ · The council's preliminary key

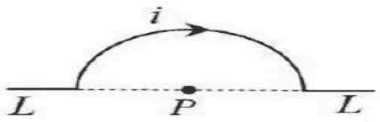
Q6 AP EAPCET 2026 · 15 May · Shift 2 MCQ

A portion of a wire of length $6L$ is bent into a semi-circular shape as shown. When i current passes through it, the magnetic field at point P is

(see the figure above)

A portion of a wire of length $6L$ is bent into a semi-circular shape as shown. When i current passes through it, the magnetic field at point P is

$6L$ పొడవు గల తీగలో కొంతభాగంను పటంలో చూపిన విధంగా అర్ధవృత్తాకరంగా వంచారు. దానిగుండా i విద్యుత్ ప్రవహింపచేస్తే, P వద్ద అయస్కాంత క్షేత్రము



Options :

1. $\frac{\mu_0 i\pi}{4L}$
2. $\frac{\mu_0 i\pi}{8L}$
3. $\frac{\mu_0 i\pi}{16L}$
4. $\mu_0 i\pi$

(A) $\frac{\mu_0 i\pi}{4L}$
(B) $\frac{\mu_0 i\pi}{8L}$
(C) $\frac{\mu_0 i\pi}{16L}$
(D) $\mu_0 i\pi$

Answer: (C) $\frac{\mu_0 i\pi}{16L}$ · The council's preliminary key

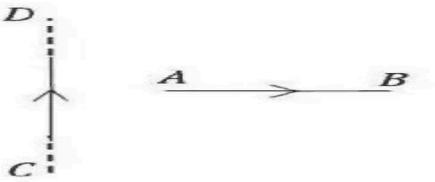
Q7 AP EAPCET 2026 · 15 May · Shift 2 MCQ

A current carrying wire AB is placed near an another long, straight current carrying wire CD as shown in figure. If AB is free to move, then AB will have

(see the figure above)

A current carrying wire AB is placed near an another long, straight current carrying wire CD as shown in figure. If AB is free to move, then AB will have

పటంలో చూపిన విధంగా తిన్నని పొడవైన విద్యుత్ ప్రవాహం ఉన్న వాహకం CD దగ్గరలో విద్యుత్ ప్రవాహం ఉన్న తీగ AB ఉంచడం జరిగింది. AB స్వేచ్ఛగా కదలగలిగితే, AB కి



Options :

1. Translational motion only
రేఖీయ చలనం మాత్రమే ఉంటుంది

2. Rotational motion only
భ్రమణ చలనం మాత్రమే ఉంటుంది

3. Both translational and rotational motion
రేఖీయ మరియు భ్రమణ చలనం రెండూ ఉంటాయి

4. Neither translational nor rotational motion
రేఖీయ, భ్రమణ చలనం రెండూ ఉండవు

(A) Translational motion only
(B) Rotational motion only
(C) Both translational and rotational motion
(D) Neither translational nor rotational motion

Answer: (C) Both translational and rotational motion · The council's preliminary key

Q8 AP EAPCET 2026 · 14 May · Shift 1 MCQ

If a current is passing in a spring, it

(A) gets compressed
(B) gets expanded
(C) oscillates
(D) remains unchanged

Answer: (A) gets compressed · The council's preliminary key

Q9 AP EAPCET 2026 · 14 May · Shift 1 MCQ

Magnetic moment of an electron moving in a circular orbit of radius 'r' with a speed 'v' is

(A) $\frac{ev^2}{r}$
(B) evr
(C) $\frac{ev^2}{2r}$
(D) $\frac{evr}{2}$

Answer: (D) $\frac{evr}{2}$ · The council's preliminary key

Q10 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The radius of a coil of wire with N turns is 0.1 m and 2A current flows in the coil as shown. A long straight wire carrying a current of 20π A as shown is located at 0.5 m from the centre of the coil. The number of turns in the coil if the resultant magnetic field at the centre of the coil is zero

(see the figure above)

The radius of a coil of wire with N turns is 0.1 m and 2A current flows in the coil as shown. A long straight wire carrying a current of 20π A as shown is located at 0.5 m from the centre of the coil. The number of turns in the coil if the resultant magnetic field at the centre of the coil is zero



N చుట్లు కలిగిన తీగచుట్ట వ్యాసార్ధం 0.1 m. అందులో 2A విద్యుత్ పటంలో చూపిన విధంగా ప్రవహిస్తోంది. ఒక తిన్నని పొడవైన తీగలో 20π A విద్యుత్. పటంలో చూపిన విధంగా ప్రవహిస్తోంది. ఈ తీగను తీగచుట్ట కేంద్రం నుంచి 0.5 m దూరంలో ఉంచారు. తీగచుట్ట కేంద్రం వద్ద ఫలిత అయస్కాంత క్షేత్రం శూన్యం అయితే, తీగచుట్టలో చుట్ల సంఖ్య

Options :

1. 2
2. 4
3. 6
4. 10

(A) 2
(B) 4
(C) 6
(D) 10

Answer: (A) 2 · The council's preliminary key

Q11 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A charged particle moves in a region where there is a uniform electric field $E = 2 \times 10^{3}\hat{i}$ N C^{-1} and a uniform magnetic field $B = 5 \times 10^{-2}\hat{j}$ T. The velocity of the particle (in ms^{-1}), if the particle moves without any acceleration.

(A) $5 \times 10^{4}\,\hat{k}$
(B) $2 \times 10^{3}\,\hat{k}$
(C) $4 \times 10^{4}\,\hat{k}$
(D) $4 \times 10^{4}\,(-\hat{k})$

Answer: (C) $4 \times 10^{4}\,\hat{k}$ · The council's preliminary key

Q12 AP EAPCET 2026 · 13 May · Shift 1 MCQ

A proton and a deuteron, both having the same kinetic energy, enter perpendicularly into a uniform magnetic field B. For motion of proton and deuteron on circular path of radius R_p and R_d respectively, the correct statement is

(A) $R_d = \sqrt{2}R_p$
(B) $R_d = \frac{R_p}{\sqrt{2}}$
(C) $R_d = R_p$
(D) $R_d = 2R_p$

Answer: (A) $R_d = \sqrt{2}R_p$ · The council's preliminary key

Q13 AP EAPCET 2026 · 13 May · Shift 1 MCQ

A wire carrying current I and other parallel wire carrying current 2I in the same direction produces a magnetic field B at the midpoint between them. Then the magnitude of field at the same point, when the 2I wire is switched off

(A) B/2
(B) 2 B
(C) B
(D) 4 B

Answer: (C) B · The council's preliminary key

Q14 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The current and voltage sensitivities of a moving coil galvanometer are 80 divisions per mA and 2 divisions per mV respectively. If the galvanometer has 100 divisions, then the resistance to be connected in series to the galvanometer to convert it into a voltmeter which can measure a maximum potential difference of 5 V is

(A) $4040\ \Omega$
(B) $3960\ \Omega$
(C) $5040\ \Omega$
(D) $4960\ \Omega$

Answer: (B) $3960\ \Omega$ · The council's preliminary key

Q15 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A circular coil of radius 10 cm having 200 turns is carrying a current of 2A. If the magnetic field at a point on the axis of the coil which is at a distance of 20 cm from the center of the coil is B, then the magnetic field at a point on the axis which is at a distance of 5 cm from the center of the coil is

(A) 8B
(B) 4B
(C) 6B
(D) 2B

Answer: (A) 8B · The council's preliminary key

Q16 AP EAPCET 2026 · 12 May · Shift 1 MCQ

A proton with energy 2 MeV is moving perpendicular to a uniform magnetic field of 2.5 tesla. The force on the proton is
(mass of proton is 1.66×10^{-27} kg)

(A) 2.5×10^{-10} N
(B) 7.8×10^{-11} N
(C) 2.5×10^{-11} N
(D) 7.8×10^{-12} N

Answer: (D) 7.8×10^{-12} N · The council's preliminary key

Q17 AP EAPCET 2026 · 12 May · Shift 1 MCQ

An electron in the ground state of hydrogen atom is revolving in anti-clockwise direction in a circular orbit. The orbital magnetic moment of the electron is given by

(A) $\frac{h}{2\pi}$
(B) $\frac{eh}{2\pi m}$
(C) $\frac{eh}{4\pi m}$
(D) $\frac{h}{4\pi m}$

Answer: (C) $\frac{eh}{4\pi m}$ · The council's preliminary key

Q18 AP EAPCET 2026 · 12 May · Shift 2 MCQ

A particle, having a charge 100 times the charge of an electron, is rotating in a circular path of radius 0.8 m in 1 second. The value of the magnetic field produced at the centre of the circle will be
(μ_o – permeability of free space)

(A) $\frac{10^{-7}}{\mu_o}$
(B) $10^{-17}\mu_o$
(C) $10^{-6}\mu_o$
(D) $10^{-7}\mu_o$

Answer: (B) $10^{-17}\mu_o$ · The council's preliminary key

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Q19 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A long solenoid having 15 cm circumference and 70 turns per metre is carrying a current of 2A. The magnetic field inside the solenoid at a distance 1 cm from the surface and the magnetic field outside the solenoid respectively are

(A) $0, 1.76 \times 10^{-4}$ T
(B) 8.8×10^{-3} T, 0
(C) 1.76×10^{-4} T, 0
(D) $0, 8.8 \times 10^{-3}$ T

Answer: (C) 1.76×10^{-4} T, 0 · The council's preliminary key

Q20 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A proton and an alpha particle enter a uniform magnetic field with the same kinetic energy making the same angle of 30° with the direction of the field. The ratio of the pitches of the paths of proton and alpha particle is

(A) $2:1$
(B) $1:1$
(C) $1:2$
(D) $8:1$

Answer: (B) $1:1$ · The council's preliminary key

Q21 TS EAPCET 2026 · 11 May · Shift 2 MCQ

Two identical circular coils each of radius R and number of turns N are arranged coaxially with a separation of R between their centers. If the current through each coil is I, then the maximum resultant magnetic field induced at the midpoint of the line joining the centers of the two coils is

(A) $\frac{2\mu_0 NI}{R}$
(B) $\frac{4\mu_0 NI}{\sqrt{5}R}$
(C) $\frac{8\mu_0 NI}{5\sqrt{5}R}$
(D) $\frac{\mu_0 NI}{\pi R}$

Answer: (C) $\frac{8\mu_0 NI}{5\sqrt{5}R}$ · The council's preliminary key

Q22 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The maximum kinetic energy of a proton ejected from a cyclotron with dees of radius 70 cm and oscillating frequency 5 MHz (in MeV) is

(Mass of proton = 1.67×10^{-27} kg)

(A) 2.53
(B) 3.87
(C) 1.46
(D) 4.84

Answer: (A) 2.53 · The council's preliminary key

Q23 TS EAPCET 2026 · 10 May · Shift 1 MCQ

A circular coil of radius 10 cm is carrying a current. From the centre of the coil, the distance of a point on its axis where $\frac{dB}{dx}$ becomes maximum is

($\frac{dB}{dx}$ is the change in magnetic field with distance x from the centre of the coil)

(A) 40 cm
(B) 20 cm
(C) 10 cm
(D) 5 cm

Answer: (D) 5 cm · The council's preliminary key

Q24 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The magnetic field required to accelerate deuterons in a cyclotron operated at a frequency of 28 MHz is

(Mass of proton $= 1.67 \times 10^{-27}$ kg)

(A) 7.348 T
(B) 0.917 T
(C) 1.837 T
(D) 3.674 T

Answer: (D) 3.674 T · The council's preliminary key

Q25 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Two long straight parallel wires P and Q carrying currents of 10 A and 20 A respectively in the same direction are placed in air with a separation of 10 cm between them. Another long straight wire R carrying a current of 5 A in the opposite direction is placed between the wires P and Q and parallel to them at a distance of 5 cm from wire Q. Then the magnitude of the net force acting on wire R per unit length is

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(A) $6 \times 10^{-4}\ \mathrm{Nm}^{-1}$
(B) $2 \times 10^{-4}\ \mathrm{Nm}^{-1}$
(C) $4 \times 10^{-4}\ \mathrm{Nm}^{-1}$
(D) $8 \times 10^{-4}\ \mathrm{Nm}^{-1}$

Answer: (B) $2 \times 10^{-4}\ \mathrm{Nm}^{-1}$ · The council's preliminary key

Q26 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Photons of energy 4.2 eV are incident on a photosensitive material of work function 1.7 eV. If the emitted photoelectrons enter normally into a uniform magnetic field of $\sqrt{2} \times 10^{-4}$ T, then the largest radius of the circular path described by the photoelectrons is nearly

(A) 3.75 cm
(B) 7.5 cm
(C) 2.5 cm
(D) 1.75 cm

Answer: (A) 3.75 cm · The council's preliminary key

Q27 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If a thin conducting wire of length 12 m carrying a current of $2\sqrt{3}$ A is bent into a regular hexagonal loop and is placed in a uniform magnetic field of 2T, then the maximum torque acting on the loop is

(A) 36 N m
(B) 48 N m
(C) 72 N m
(D) 24 N m

Answer: (C) 72 N m · The council's preliminary key

Q28 TS EAPCET 2026 · 9 May · Shift 1 MCQ

A current of $\frac{1}{3\pi}$ A passes through an ideal toroid of 900 turns per metre. If the relative permeability of the material of the core of the toroid is 400, then the magnetic field inside the core of the toroid is

(A) 48 mT
(B) 24 mT
(C) 72 mT
(D) 96 mT

Answer: (A) 48 mT · The council's preliminary key

Q29 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If an electron moving with a velocity of $4 \times 10^{6}\ \mathrm{ms}^{-1}$ enters a uniform magnetic field of $\frac{\pi}{2}\ \mathrm{mT}$ at an angle of 60° with the direction of the magnetic field, then the pitch of the helical path of the electron

is
(Mass of the electron $= 9 \times 10^{-31}$ kg)

(A) 1.5 cm
(B) 3 cm
(C) 4.5 cm
(D) 6 cm

Answer: (C) 4.5 cm · The council's preliminary key

Q30 TS EAPCET 2026 · 9 May · Shift 2 MCQ

A thin conducting wire of length L carrying a current of 2 A is bent into a square loop of 2 turns and another thin conducting wire of length 2L carrying a current of 3 A is bent into a circular loop of 3 turns. If the magnetic moment of the circular loop is $\frac{4}{\pi}$ A m^2, then the magnetic moment of the square loop is

(A) 0.5π A m^2
(B) 0.5 A m^2
(C) 0.25π A m^2
(D) 0.25 A m^2

Answer: (D) 0.25 A m^2 · The council's preliminary key

Q31 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If a wire of length 'L' carrying a current 'i' is bent in the shape of a semi-circular arc as shown in the figure, then the magnetic field at centre of the arc is

(see the figure above)

If a wire of length 'L' carrying a current 'i' is bent in the shape of a semi-circular arc as shown in the figure, then the magnetic field at centre of the arc is

విద్యుత్ ప్రవాహం 'i' మరియు పొడవు 'L' గల ఒక తీగను పటంలో చూపిన విధంగా అర్ధ వృత్తాకార చాపంగా వంచిన, ఆ చాపం కేంద్రం వద్ద అయస్కాంత క్షేత్రం



Options :

1. $\frac{\pi\mu_o i}{4L}$
2. $\frac{\pi\mu_o i}{2L}$
3. $\frac{\mu_o i}{2\pi L}$
4. $\frac{\mu_o i}{4\pi L}$

(A) $\frac{\pi\mu_o i}{4L}$
(B) $\frac{\pi\mu_o i}{2L}$
(C) $\frac{\mu_o i}{2\pi L}$
(D) $\frac{\mu_o i}{4\pi L}$

Answer: (A) $\frac{\pi\mu_o i}{4L}$ · The council's preliminary key

Q32 AP EAPCET 2025 · 26 May · Shift 1 MCQ

If a current of 15 A passes through a solenoid of length 25 cm, radius 2 cm and number of turns 500, then the magnetic moment of the solenoid is

(A) $6\ \mathrm{J\,T^{-1}}$
(B) $3\ \mathrm{J\,T^{-1}}$
(C) $3\pi\ \mathrm{J\,T^{-1}}$
(D) $6\pi\ \mathrm{J\,T^{-1}}$

Answer: (C) $3\pi\ \mathrm{J\,T^{-1}}$ · The council's preliminary key

Q33 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The maximum magnetic field produced by a current of 12 A passing through a copper wire of diameter 1.2 mm is

(A) 2 mT
(B) 4 mT
(C) 1.5 mT
(D) 8 mT

Answer: (B) 4 mT · The council's preliminary key

Q34 AP EAPCET 2025 · 26 May · Shift 1 MCQ

Two moving coil galvanometers A and B having identical springs are placed in magnetic fields of $0.25\ \mathrm{T}$ and $0.5\ \mathrm{T}$ respectively. If the number of turns in A and B are repsectively 36 and 48, and the areas of the coils A and B are $2.4\times10^{-3}\ \mathrm{m^2}$ and $4.8\times10^{-3}\ \mathrm{m^2}$ respectively, then the ratio of the current sensitivities of the galvanometers A and B is

(A) $3:16$
(B) $16:3$
(C) $4:3$
(D) $3:4$

Answer: (A) $3:16$ · The council's preliminary key

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Q35 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The magnetic field at the centre of a long solenoid having 400 turns per unit length and carrying a current 'i' is 6.24×10^{-2} T. The magnetic field at the centre of another long solenoid having 200 turns per unit length and carrying a current $\frac{'i'}{2}$ is

(A) 1.56×10^{-2} T
(B) 2.4×10^{-2} T
(C) 26×10^{-2} T
(D) 2.6×10^{-2} T

Answer: (A) 1.56×10^{-2} T · The council's preliminary key

Q36 AP EAPCET 2025 · 26 May · Shift 2 MCQ

If a proton of kinetic energy 8.35 MeV enters a uniform magnetic field of 10 T at right angles to the direction of the field, then the force acting on the proton is (Mass of proton $= 1.67 \times 10^{-27}$ kg and charge of proton $= 1.6 \times 10^{-19}$ C)

(A) 48×10^{-12} N
(B) 16×10^{-12} N
(C) 64×10^{-12} N
(D) 32×10^{-12} N

Answer: (C) 64×10^{-12} N · The council's preliminary key

Q37 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Two charged particles of specific charges in the ratio $2 : 1$ and masses in the ratio $1 : 4$ moving with same kinetic energy enter a uniform magnetic field at right angles to the direction of the field. The ratio of the radii of the circular paths in which the particles move under the influence of the magnetic field is

(A) $2 : 1$
(B) $1 : 1$
(C) $4 : 1$
(D) $8 : 1$

Answer: (B) $1 : 1$ · The council's preliminary key

Q38 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If a charged particle enters a uniform magnetic field normally with certain velocity, then the time period of revolution of the particle

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(A) decreases with increase of velocity of the particle
(B) increases with increase of radius of the orbit
(C) increases with increase of magnetic field
(D) decreases with increase of specific charge of the particle

Answer: (D) decreases with increase of specific charge of the particle · The council's preliminary key

Q39 AP EAPCET 2025 · 23 May · Shift 1 MCQ

A long straight wire of circular cross-section of radius 'a' is carrying a steady current. The current is distributed uniformly across the cross-section of the wire. The ratio of the magnetic fields at points 0.5a and 1.5a from the centre of the wire is

(A) $1:1$
(B) $2:3$
(C) $1:2$
(D) $3:4$

Answer: (D) $3:4$ · The council's preliminary key

Q40 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The magnetic moment of an electron moving in a circular orbit of radius R with a time period T is

(A) $\frac{2\pi Re}{T}$
(B) $\frac{\pi eR}{T}$
(C) $\frac{\pi eR^2}{T}$
(D) $\pi R^2 eT$

Answer: (C) $\frac{\pi eR^2}{T}$ · The council's preliminary key

Q41 AP EAPCET 2025 · 23 May · Shift 2 MCQ

A solenoid of one meter length and 3.55 cm inner diameter carries a current of 5 A. If the solenoid consists of five closely packed layers each with 700 turns along its length, then the magnetic field at its centre is

(A) 22 mT
(B) 35 mT
(C) 44 mT
(D) 15 mT

Answer: (A) 22 mT · The council's preliminary key

Q42 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The force per unit length on a straight wire carrying current of 8 A making an angle of 30° with a uniform magnetic field of 0.15 T is

(A) $1.2\ \mathrm{N\,m^{-1}}$
(B) $1.02\ \mathrm{N\,m^{-1}}$
(C) $0.6\ \mathrm{N\,m^{-1}}$
(D) $2.4\ \mathrm{N\,m^{-1}}$

Answer: (C) $0.6\ \mathrm{N\,m^{-1}}$ · The council's preliminary key

Q43 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A wire of length 10 m carrying current of 1 A is bent in to a circular loop. If a magnetic field of $2\pi \times 10^{-4}$ T is applied on the loop, then the maximum torque acting on it is

(A) 100×10^{-4} N m
(B) 50×10^{-4} N m
(C) 25×10^{-4} N m
(D) 75×10^{-4} N m

Answer: (B) 50×10^{-4} N m · The council's preliminary key

Q44 AP EAPCET 2025 · 22 May · Shift 2 MCQ

In a wire of radius 1 mm, a steady current of 2 A uniformly distributed across the cross-section of the wire is flowing. Then the magnetic field at a point 0.25 mm from the centre of the wire is

(A) $100\ \mu\mathrm{T}$
(B) $200\ \mu\mathrm{T}$
(C) $300\ \mu\mathrm{T}$
(D) $400\ \mu\mathrm{T}$

Answer: (A) $100\ \mu\mathrm{T}$ · The council's preliminary key

Q45 AP EAPCET 2025 · 22 May · Shift 2 MCQ

The magnetic field at the centre of a current carrying circular coil of radius R is B_c and the magnetic field at a point on its axis at a distance R from its centre is B_a. The value of $\frac{B_c}{B_a}$ is

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

Answer: (C) $2\sqrt{2}$ · The council's preliminary key

Q46 AP EAPCET 2025 · 21 May · Shift 1 MCQ

The magnetic field at a distance of 10 cm from a long straight thin wire carrying a current of 4 A is

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(A) $6\ \mu\mathrm{T}$
(B) $16\ \mu\mathrm{T}$
(C) $8\ \mu\mathrm{T}$
(D) $4\ \mu\mathrm{T}$

Answer: (C) $8\ \mu\mathrm{T}$ · The council's preliminary key

Q47 AP EAPCET 2025 · 21 May · Shift 1 MCQ

A velocity selector is to be constructed to select ions with a velocity of $6\ \mathrm{km\ s^{-1}}$. If the electric field used is $400\ \mathrm{V\ m^{-1}}$, then the magnetic field to be used is

(A) $\frac{11}{20}\ \mathrm{T}$
(B) $\frac{2}{3}\ \mathrm{T}$
(C) $\frac{1}{15}\ \mathrm{T}$
(D) $\frac{2}{15}\ \mathrm{T}$

Answer: (C) $\frac{1}{15}\ \mathrm{T}$ · The council's preliminary key

Q48 AP EAPCET 2025 · 21 May · Shift 1 MCQ

A closely wound solenoid of 1200 turns and area of cross-section $5\ \mathrm{cm^2}$ carries a current. If the magnetic moment of the solenoid is $1.2\ \mathrm{J\ T^{-1}}$, then the current through the solenoid is

(A) $2.5\ \mathrm{A}$
(B) $2\ \mathrm{A}$
(C) $3\ \mathrm{A}$
(D) $1.5\ \mathrm{A}$

Answer: (B) $2\ \mathrm{A}$ · The council's preliminary key

Q49 AP EAPCET 2025 · 21 May · Shift 2 MCQ

If a straight current carrying wire of linear density $0.12\ \mathrm{kg\ m^{-1}}$ is suspended in mid air by a uniform horizontal magnetic field of $0.5\ \mathrm{T}$ normal to the length of the wire, then the current through the wire is
(Acceleration due to gravity $= 10\ \mathrm{m\ s^{-2}}$; Neglect earth's magnetic field)

(A) $2.4\ \mathrm{A}$
(B) $1.2\ \mathrm{A}$
(C) $0.6\ \mathrm{A}$
(D) $4.8\ \mathrm{A}$

Answer: (A) $2.4\ \mathrm{A}$ · The council's preliminary key

Q50 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Two concentric loops A and B of same radius 2π cm are placed at right angles to each other. If the currents flowing through A and B are 3 A and 4 A respectively, then the net magnetic field at their common centre is

(A) 0.75×10^{-5} T
(B) 25×10^{-5} T
(C) 5×10^{-5} T
(D) 2.5×10^{-5} T

Answer: (C) 5×10^{-5} T · The council's preliminary key

Q51 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The number of turns of two circular coils A and B are 300 and 200 respectively. The magnetic moments of the two coils A and B are in the ratio $1:2$. If the two coils carry equal currents, then the ratio of radii of coils A and B is

(A) $2:\sqrt{3}$
(B) $2:3$
(C) $1:2$
(D) $1:\sqrt{3}$

Answer: (D) $1:\sqrt{3}$ · The council's preliminary key

Q52 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Two long straight parallel wires carry currents of 8 A and 10 A in opposite directions. If the distance of separation between the wires is 9 cm, then the net magnetic field at a point between the two wires, which is at a perpendicular distance of 4 cm from the wire carrying 8 A current is

(A) Zero
(B) 4×10^{-5} T
(C) 8×10^{-5} T
(D) 12×10^{-5} T

Answer: (C) 8×10^{-5} T · The council's preliminary key

Q53 TS EAPCET 2025 · 4 May · Shift 2 MCQ

As shown in the figure, a uniform straight wire of length $30\sqrt{3}$ cm is bent in the form of an equilateral triangle ABC. A uniform magnetic field 2T is applied parallel to the side BC. If the current through the wire is 2A, the magnitude of the force on the side AC is

($\overline{B}$ represents the direction of the magnetic field)

(see the figure above)

: Yes
Correct Marks : 1 Wrong Marks : 0

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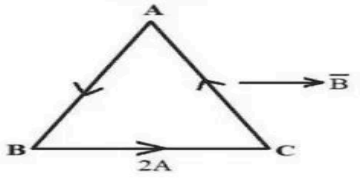
As shown in the figure, a uniform straight wire of length $30\sqrt{3}$ cm is bent in the form of an equilateral triangle ABC. A uniform magnetic field 2T is applied parallel to the side BC. If the current through the wire is 2A, the magnitude of the force on the side AC is
($\overline{B}$ represents the direction of the magnetic field)
$30\sqrt{3}$ cm పొడవు గల ఒక ఏకరీతి తిన్నని తీగ పటంలో చూపిన విధంగా ఒక సమబాహు త్రిభుజం ABC ఆకారంలో వంచబడినది. భుజం BC కి సమాంతరంగా ఒక ఏకరీతి అయస్కాంత క్షేత్రం 2T ప్రయోగించబడినది. తీగలో విద్యుత్ ప్రవాహం 2A అయిన, భుజం AC పై పనిచేయు బల పరిమాణం
($\overline{B}$ అయస్కాంత క్షేత్ర దిశను సూచించును)



Options :
1. $2\sqrt{3}$ N
2. $0.2\sqrt{3}$ N
3. 1.2 N
4. 0.6 N

(A) $2\sqrt{3}$ N
(B) $0.2\sqrt{3}$ N
(C) 1.2 N
(D) 0.6 N

Answer: (D) 0.6 N · The council's preliminary key

Q54 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A proton moving with a velocity of $8 \times 10^5\ \mathrm{ms}^{-1}$ enters a uniform magnetic field normal to the direction of the magnetic field. If the radius of the circular path of the proton in the magnetic field is 8.3 cm, then the magnitude of the magnetic field is

(Charge of proton $= 1.6 \times 10^{-19}$ C and mass of the proton $= 1.66 \times 10^{-27}$ kg)

(A) 500 mT
(B) 100 mT
(C) 200 mT
(D) 400 mT

Answer: (B) 100 mT · The council's preliminary key

Q55 TS EAPCET 2025 · 3 May · Shift 1 MCQ

The magnetic field due to a current carrying circular coil on its axis at a distance of $\sqrt{2}$ d from the centre of the coil is B. If d is the diameter of the coil, then the magnetic field at the centre of the coil is

(A) 18B
(B) 27B
(C) 3B
(D) 9B

Answer: (B) 27B · The council's preliminary key

Q56 TS EAPCET 2025 · 3 May · Shift 1 MCQ

A square coil of side 10 cm having 200 turns is placed in a uniform magnetic field of 2 T such that the plane of the coil is in the direction of magnetic field. If the current through the coil is 3 mA, then the torque acting on the coil is

(A) 12×10^{-3} Nm
(B) 24×10^{-3} Nm
(C) 6×10^{-3} Nm
(D) Zero

Answer: (A) 12×10^{-3} Nm · The council's preliminary key

Q57 TS EAPCET 2025 · 3 May · Shift 2 MCQ

An alpha particle moving with certain speed towards east enters a uniform magnetic field directed vertically up. The alpha particle will then move in

(A) vertical circular path with the same speed
(B) horizontal circular path with the same speed
(C) vertical circular path with increased speed
(D) vertical circular path with decreased speed

Answer: (B) horizontal circular path with the same speed · The council's preliminary key

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Q58 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The ratios of the voltage sensitivities, resistances and areas of the coils of two moving coil galvanometers A and B are 4:3, 3:4 and 1:2 respectively. If the number of turns of the coil of galvanometer A is 200, then the number of turns of the coil of galvanometer B is
(All other quantities remain same in both the cases)

(A) 100
(B) 150
(C) 200
(D) 400

Answer: (A) 100 · The council's preliminary key

Q59 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A solenoid of 1000 turns per metre has a core of material with relative permeability 400. The windings of the solenoid are insulated from the core and a current of 2 A is passed through the solenoid. Then the value of the magnetic intensity inside the solenoid is

(A) $2 \times 10^3\ \mathrm{Am}^{-1}$
(B) $1.0\ \mathrm{Am}^{-1}$
(C) $8 \times 10^5\ \mathrm{Am}^{-1}$
(D) $794\ \mathrm{Am}^{-1}$

Answer: (A) $2 \times 10^3\ \mathrm{Am}^{-1}$ · The council's preliminary key

Q60 TS EAPCET 2025 · 2 May · Shift 1 MCQ

A proton and an alpha particle moving with equal speeds enter normally into a uniform magnetic field. The ratio of times taken by the proton and the alpha particle to make one complete revolution in the magnetic field is

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

Answer: (B) $1 : 2$ · The council's preliminary key

Q61 TS EAPCET 2025 · 2 May · Shift 1 MCQ

A solenoid of length 50 cm and radius 10 cm has two closely wound layers of windings 100 turns each. If a current of 2.5 A is passing through the windings, the magnetic field (in 10^{-4} T) at a point 5 cm from the axis is

(A) 2π
(B) 31.4
(C) 4π
(D) Zero

Answer: (C) 4π · The council's preliminary key

Q62 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Two identical wires, carrying equal currents are bent into circular coils A and B with 2 and 3 turns respectively. The ratio of the magnetic fields at the centres of the coils A and B is

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(A) $4:9$
(B) $2:3$
(C) $9:4$
(D) $3:2$

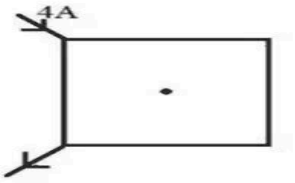
Answer: (A) $4:9$ · The council's preliminary key

Q63 TS EAPCET 2025 · 2 May · Shift 2 MCQ

A current of 4 A is passed through a square loop of side 5 cm made of a uniform manganin wire as shown in the figure. The magnetic field at the centre of the loop is

(see the figure above)

A current of 4 A is passed through a square loop of side 5 cm made of a uniform manganin wire as shown in the figure. The magnetic field at the centre of the loop is
ఏకరీతి మాంగనిన్ తీగతో తయారుచేయబడిన 5 cm భుజము గల ఒక చతురస్రాకార లూప్ నుండి 4 A విద్యుత్తును పటంలో చూపిన విధంగా ప్రవహింపజేసారు. చుట్ట కేంద్రం వద్ద అయస్కాంత క్షేత్రం



Options :

1. $\frac{24\sqrt{2}}{5}\times10^{-5}$ T
2. $\frac{3\sqrt{2}}{5}\times10^{-5}$ T
3. $\frac{6\sqrt{2}}{5}\times10^{-5}$ T
4. Zero
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(A) $\frac{24\sqrt{2}}{5}\times10^{-5}$ T
(B) $\frac{3\sqrt{2}}{5}\times10^{-5}$ T
(C) $\frac{6\sqrt{2}}{5}\times10^{-5}$ T
(D) Zero

Answer: (D) Zero · The council's preliminary key

Q64 AP EAPCET 2024 · 23 May · Shift 1 MCQ

A charge 'q' is spread uniformly over an isolated ring of radius 'R'. The ring is rotated about its natural axis with angular speed 'ω'. The magnetic dipole moment of the ring is

(A) $\frac{q\omega R}{2}$
(B) $q\omega R^2$
(C) $\frac{q\omega R^2}{2}$
(D) $\frac{q\omega}{2R}$

Answer: (C) $\frac{q\omega R^2}{2}$ · The council's preliminary key

Q65 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Current sensitivities of two galvanometers G_1 and G_2 of resistances $100\ \Omega$ and $50\ \Omega$ are 10^8 div/A and 0.5×10^5 div/A respectively. The galvanometer in which the voltage sensitivity is more is

(A) Same in both galvanometers
(B) More in G_2
(C) Zero
(D) More in G_1

Answer: (D) More in G_1 · The council's preliminary key

Q66 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Two toroids with number of turns 400 and 200 have average radii respectively 30 cm and 60 cm. If they carry the same current, the ratio of magnetic fields in these two toroids is

(A) $2:1$
(B) $1:4$
(C) $2:3$
(D) $4:1$

Answer: (D) $4:1$ · The council's preliminary key

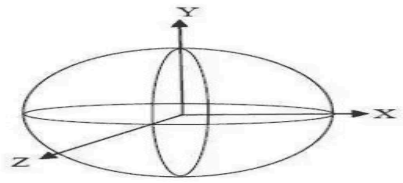
Q67 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Three rings, each with equal radius 'r' are placed mutually perpendicular to each other and each having centre at the origin of coordinate system. 'I' is current passing through each ring. The magnetic field value at the common centre is

(see the figure above)

Three rings, each with equal radius 'r' are placed mutually perpendicular to each other and each having centre at the origin of coordinate system. 'I' is current passing through each ring. The magnetic field value at the common centre is

'r' వ్యాసార్ధం కలిగి, 'I' విద్యుత్ ప్రవహించుచున్న మూడు రింగులు పటములో చూపినట్లు ఒక దానికొకటి లంబముగా కలవు. వీటి యొక్క కేంద్రము, నిరూపక వ్యవస్థ యొక్క మూల బిందువు వద్ద కలదు.అయినచో వీటి ఉమ్మడి కేంద్రం వద్ద అయిస్కాంత క్షేత్రము విలువ



Options :

1. Zero
2. $(\sqrt{3}-1)\frac{\mu_0 I}{2\pi r}$
3. $\sqrt{3}\frac{\mu_0 I}{2r}$
4. $\sqrt{2}\frac{\mu_0 I}{2r}$

(A) Zero

(B) $(\sqrt{3}-1)\frac{\mu_0 I}{2\pi r}$

(C) $\sqrt{3}\frac{\mu_0 I}{2r}$

(D) $\sqrt{2}\frac{\mu_0 I}{2r}$

Answer: (C) $\sqrt{3}\frac{\mu_0 I}{2r}$ · The council's preliminary key

Q68 AP EAPCET 2024 · 22 May · Shift 2 MCQ

Current flows in a conductor from east to west. The direction of the magnetic field at a point below the conductor is towards

(A) North

(B) South

(C) East

(D) West

Answer: (B) South · The council's preliminary key

Q69 AP EAPCET 2024 · 22 May · Shift 2 MCQ

Two infinite length wires carry currents 8 A and 6 A respectively and are placed along X and Y axes respectively. Magnetic field at a point $P\,(0,0,d)$ will be

(A) $\frac{7\,\mu_0}{\pi d}$
(B) $\frac{10\,\mu_0}{\pi d}$
(C) $\frac{14\,\mu_0}{\pi d}$
(D) $\frac{5\,\mu_0}{\pi d}$

Answer: (D) $\frac{5\,\mu_0}{\pi d}$ · The council's preliminary key

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Q70 AP EAPCET 2024 · 21 May · Shift 1 MCQ

When an electron placed in a uniform magnetic field is accelerated from rest through a potential difference V_1, it experiences a force F. If the potential difference is changed to V_2, the force experienced by the electron in same magnetic field is 2F, then the ratio of potential differences V_2/V_1 is

(A) $2:1$
(B) $1:4$
(C) $4:1$
(D) $1:2$

Answer: (C) $4:1$ · The council's preliminary key

Q71 AP EAPCET 2024 · 21 May · Shift 1 MCQ

A rectangular loop of sides 25 cm and 10 cm carrying a current of 10 A is placed with its longer side parallel to a long straight conductor 10 cm apart carrying current 25 A. The net force on the loop is

(A) 6.25×10^{-5} N
(B) 5.5×10^{-5} N
(C) 3.75×10^{-5} N
(D) 8.75×10^{-11} N

Answer: (A) 6.25×10^{-5} N · The council's preliminary key

Q72 AP EAPCET 2024 · 21 May · Shift 2 MCQ

A proton and an alpha particle moving with energies in the ratio $1:4$ enter a uniform magnetic field of $3T$ at right angles to the direction of magnetic field. The ratio of the magnetic forces acting on the proton and the alpha particle is

(A) $1:2$
(B) $1:4$
(C) $2:3$
(D) $1:3$

Answer: (A) $1:2$ · The council's preliminary key

Q73 AP EAPCET 2024 · 21 May · Shift 2 MCQ

A charged particle moving along a straight line path enters a uniform magnetic field of 4 mT at right angles to the direction of the magnetic field. If the specific charge of the charged particle is $8 \times 10^7\ \mathrm{C\,kg^{-1}}$, the angular velocity of the particle in the magnetic field is

(A) $64 \times 10^4\ \mathrm{rad\,s^{-1}}$
(B) $32 \times 10^4\ \mathrm{rad\,s^{-1}}$
(C) $16 \times 10^4\ \mathrm{rad\,s^{-1}}$
(D) $48 \times 10^4\ \mathrm{rad\,s^{-1}}$

Answer: (B) $32 \times 10^4\ \mathrm{rad\,s^{-1}}$ · The council's preliminary key

Q74 AP EAPCET 2024 · 20 May · Shift 1 MCQ

In hydrogen atom an electron is making 6.6×10^{15} rev/s around the nucleus of radius 0.47 Å. The magnetic field induction produced at the centre of the orbit is nearly

(A) $0.14\ wb\ m^{-2}$
(B) $1.4\ wb\ m^{-2}$
(C) $14\ wb\ m^{-2}$
(D) $140\ wb\ m^{-2}$

Answer: (C) $14\ wb\ m^{-2}$ · The council's preliminary key

Q75 AP EAPCET 2024 · 20 May · Shift 2 MCQ

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

Answer: (C) 10^{-5} N · The council's preliminary key

Q76 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Two concentric thin circular rings of radii 50 cm and 40 cm, each carry a current of 3.5 A in opposite directions. If the two rings are coplanar, the net magnetic field due to the two rings at their centre is

(A) 11×10^{-7} T
(B) 22×10^{-7} T
(C) 17×10^{-7} T
(D) 8×10^{-7} T

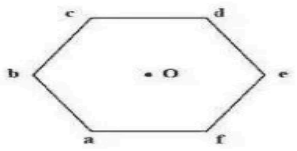
Answer: (A) 11×10^{-7} T · The council's preliminary key

Q77 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A wire shaped in a regular hexagon of side 2 cm carries a current of 4 A. The magnetic field at the centre of hexagon is.

(see the figure above)

A wire shaped in a regular hexagon of side 2 cm carries a current of 4 A. The magnetic field at the centre of hexagon is.
ఒక తీగను క్రమషడ్భుజి ఆకారంలోనికి మార్చినప్పుడు దాని బుజం పొడవు 2 cm, ఇందులో 4A విద్యుత్ ప్రవహిస్తుంది. అయితే షడ్భుజి కేంద్రం వద్ద అయస్కాంత క్షేత్రం?



Options :

1. $4\sqrt{3} \times 10^{-5}$ T
2. $8\sqrt{3} \times 10^{-5}$ T
3. $\sqrt{3} \times 10^{-5}$ T
4. $6\sqrt{3} \times 10^{-5}$ T

(A) $4\sqrt{3} \times 10^{-5}$ T
(B) $8\sqrt{3} \times 10^{-5}$ T
(C) $\sqrt{3} \times 10^{-5}$ T
(D) $6\sqrt{3} \times 10^{-5}$ T

Answer: (B) $8\sqrt{3} \times 10^{-5}$ T · The council's preliminary key

Q78 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A tightly wound coil of 200 turns and of radius 20 cm carrying current 5 A. Magnetic field at the centre of the coil is

(A) 3.14×10^{-3} T
(B) 3.14×10^{-2} T
(C) 6.28×10^{-4} T
(D) 6.28×10^{-3} T

Answer: (A) 3.14×10^{-3} T · The council's preliminary key

Q79 AP EAPCET 2024 · 18 May · Shift 1 MCQ

A current carrying coil experiences a torque due to a magnetic field. The value of the torque is 80 % of the maximum possible torque. The angle between the magnetic field and the normal to the plane of the coil is

(A) 30°
(B) 45°
(C) $\mathrm{Tan}^{-1}\left(\frac{3}{4}\right)$
(D) $\mathrm{Tan}^{-1}\left(\frac{4}{3}\right)$

Answer: (D) $\mathrm{Tan}^{-1}\left(\frac{4}{3}\right)$ · The council's preliminary key

Q80 AP EAPCET 2024 · 18 May · Shift 1 MCQ

An electron is moving with a velocity $(2\bar{i}+3\bar{j})\ \mathrm{ms}^{-1}$ in an electric field $(3\bar{i}+6\bar{j}+2\bar{k})\ \mathrm{Vs}^{-1}$ and a magnetic field $(2\bar{j}+3\bar{k})$ T. Then the magnitude and direction (with x-axis) of the Lorentz force acting on the electron is

(A) 9.6×10^{-19} N, $\theta = \cos^{-1}\left(\frac{2}{\sqrt{5}}\right)$
(B) 9.6×10^{-19} N, $\theta = \cos^{-1}\left(\frac{5}{\sqrt{2}}\right)$
(C) 2.15×10^{-18} N, $\theta = \cos^{-1}\left(\frac{2}{\sqrt{5}}\right)$
(D) 2.15×10^{-18} N, $\theta = \cos^{-1}\left(\frac{5}{\sqrt{2}}\right)$

Answer: (C) 2.15×10^{-18} N, $\theta = \cos^{-1}\left(\frac{2}{\sqrt{5}}\right)$ · The council's preliminary key

Q81 TS EAPCET 2024 · 11 May · Shift 1 MCQ

A magnetic field is applied in y-direction on an α -particle travelling along x-direction. The motion of the α -particle will be

(A) along x-axis
(B) a circle in xz plane
(C) a circle in yz plane
(D) a circle in xy plane

Answer: (B) a circle in xz plane · The council's preliminary key

Q82 TS EAPCET 2024 · 11 May · Shift 1 MCQ

A straight wire carrying a current of $2\sqrt{2}$ A is making an angle of 45° with the direction of uniform magnetic field of 3 T. The force per unit length on the wire due to the magnetic field is

(A) $4\ \mathrm{Nm}^{-1}$
(B) $8\ \mathrm{Nm}^{-1}$
(C) $6\ \mathrm{Nm}^{-1}$
(D) $3\ \mathrm{Nm}^{-1}$

Answer: (C) $6\ \mathrm{Nm}^{-1}$ · The council's preliminary key

Q83 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A long straight rod of diameter 4 mm carries a steady current 'i'. The current is uniformly distributed across its cross-section. The ratio of the magnetic fields at distances 1 mm and 4 mm from the axis of the rod is

(A) $1:2$
(B) $1:4$
(C) $4:1$
(D) $1:1$

Answer: (D) $1:1$ · The council's preliminary key

Q84 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A straight wire of length 20 cm carrying a current of $\frac{3}{\pi^2}$ A is bent in the form of a circle. The magnetic field at the centre of the circle is

(A) 8×10^{-6} T
(B) 3×10^{-6} T
(C) 12×10^{-6} T
(D) 6×10^{-6} T

Answer: (D) 6×10^{-6} T · The council's preliminary key

Q85 TS EAPCET 2024 · 10 May · Shift 2 MCQ

An electron falling freely under the influence of gravity enters a uniform magnetic field directed towards south. The electron is initially deflected towards

(A) east
(B) west
(C) north
(D) south

Answer: (A) east · The council's preliminary key

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Q86 TS EAPCET 2024 · 10 May · Shift 2 MCQ

Two long straight parallel wires A and B separated by 5 m carry currents 2 A and 6 A respectively in the same direction. The resultant magnetic field due to the two wires at a point of 2 m distance from the wire A in between the two wires is

(A) 2×10^{-6} T
(B) 2×10^{-7} T
(C) 4×10^{-7} T
(D) 4×10^{-6} T

Answer: (B) 2×10^{-7} T · The council's preliminary key

Q87 TS EAPCET 2024 · 9 May · Shift 1 MCQ

A particle of charge 2 C is moving with a velocity of $\left|\left(3\hat{i}+4\hat{j}\right)\right|$ ms^{-1} in the presence of magnetic and electric fields. If the magnetic field is $\left|\left(\hat{i}+2\hat{j}+3\hat{k}\right)\right|$ T and the electric field is $\left|\left(-2\hat{k}\right)\right|$ NC^{-1}, then the Lorentz force on the particle is

(A) 50 N
(B) 20 N
(C) 30 N
(D) 40 N

Answer: (C) 30 N · The council's preliminary key

Q88 TS EAPCET 2024 · 9 May · Shift 1 MCQ

A rectangular coil of 400 turns and 10^{-2} m^2 area, carrying a current of 0.5 A is placed in a uniform magnetic field of 1 T such that the plane of the coil makes an angle of 60° with the direction of the magnetic field. The initial moment of force acting on the coil in Nm is

(A) $\sqrt{3}$
(B) $\frac{1}{\sqrt{3}}$
(C) 1
(D) $\frac{\sqrt{3}}{2}$

Answer: (C) 1 · The council's preliminary key

Q89 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Two points A and B on the axis of a circular current loop are at distances of 4 cm and $3\sqrt{3}$ cm from the centre of the loop. If the ratio of the induced magnetic fields at points A and B is $216 : 125$, the radius of the loop is

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(A) 3 cm
(B) 4 cm
(C) 5 cm
(D) 6 cm

Answer: (A) 3 cm · The council's preliminary key

Q90 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Two charged particles A and B of masses m and 2m, charges 2q and 3q respectively moving with same velocity enter a uniform magnetic field such that both the particles make same angle ($< 90^\circ$) with the direction of the magnetic field. Then the ratio of the pitches of the helical paths of the particles A and B is

(A) $4:3$
(B) $3:2$
(C) $3:4$
(D) $2:3$

Answer: (C) $3:4$ · The council's preliminary key

Q91 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Among the following, Ampere's circuital law is represented by

(A) $\oint B.dl = 0$
(B) $\oint B.dl = \mu_0 I$
(C) $\oint B.dl = \frac{\mu_0}{I}$
(D) $\oint B.dl = \mu_0$

Answer: (B) $\oint B.dl = \mu_0 I$ · The council's preliminary key

Q92 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The radius of the path of an electron moving at a speed of $3.2 \times 10^7\ \mathrm{ms}^{-1}$ in a magnetic field of $6 \times 10^{-4}\ \mathrm{T}$ perpendicular to it is

(mass of electron is $9 \times 10^{-31}\ \mathrm{kg}$ and charge of electron is $1.6 \times 10^{-19}\ \mathrm{C}$)

(A) 22.4 cm
(B) 13 cm
(C) 30 cm
(D) 39 cm

Answer: (C) 30 cm · The council's preliminary key

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Q93 AP EAPCET 2023 · 18 May · Shift 1 MCQ

For parallel conductors and steady currents, the results in accordance with Newton's third law are

(A) Biot-Savart law and the Lorentz force
(B) Biot-Savart law and Ampere's law
(C) Ampere's law and the Lorentz force
(D) Lenz's law and Lorentz force

Answer: (A) Biot-Savart law and the Lorentz force · The council's preliminary key

Q94 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Consider a tightly wound 100 turn coil of radius 10 cm carrying a current of 2A. The magnitude of the magnetic field at the centre of the coil is

(A) 3.14×10^{-4} T
(B) 6.28×10^{-4} T
(C) 12.56×10^{-4} T
(D) 0

Answer: (C) 12.56×10^{-4} **T** · The council's preliminary key

Q95 AP EAPCET 2023 · 18 May · Shift 1 MCQ

If 'μ' is the magnetic moment of an electron revolving around hydrogen nucleus in an orbit of principal quantum number 'n', then

(A) $\mu \propto n^2$
(B) $\mu \propto n$
(C) $\mu \propto \frac{1}{n}$
(D) $\mu \propto \frac{1}{n^2}$

Answer: (B) $\mu \propto n$ · The council's preliminary key

Q96 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A cyclotron's oscillator frequency is 20 MHz. The operating magnetic field for accelerating protons is (charge of proton = 1.6×10^{-19} C, mass of proton = 1.67×10^{-27} kg)

(A) 0.66 T
(B) 1.1 T
(C) 0.33 T
(D) 1.31 T

Answer: (D) 1.31 T · The council's preliminary key

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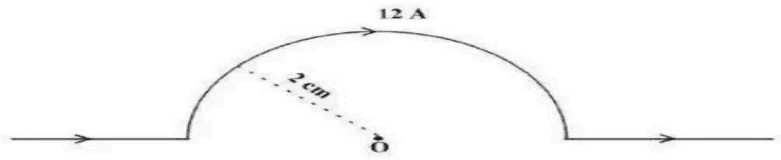
Q97 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A straight wire carrying a current of 12 A is bent into a semi-circular arc of radius 2 cm as shown in the figure. Then the magnetic field due to the straight segments at the centre of the arc is

(see the figure above)

A straight wire carrying a current of 12 A is bent into a semi-circular arc of radius 2 cm as shown in the figure. Then the magnetic field due to the straight segments at the centre of the arc is

పటంలో చూపిన విధంగా 12 A విద్యుత్ ప్రవాహం ప్రవహిస్తున్న తిన్నని తీగను 2.0 cm వ్యాసార్ధం ఉన్న అర్ధ వృత్త చాపంగా వంచారు. తిన్నని ఖండాల వల్ల చాపం కేంద్రం వద్ద అయస్కాంత క్షేత్రం విలువ



Options :

1. 12 T
2. 6 T
3. 24 T
4. 0

(A) 12 T
(B) 6 T
(C) 24 T
(D) 0

Answer: (D) 0 · The council's preliminary key

Q98 AP EAPCET 2023 · 17 May · Shift 1 MCQ

If 'q' is electric charge, B is magnetic field, 'R' is the dee radius and 'm' is the mass of ions, the kinetic energy of the ions in cyclotron is given by

(A) $\frac{qBR}{2m}$
(B) $\frac{qBR}{m}$
(C) $\frac{q^2B^2R^2}{4\pi m}$
(D) $\frac{q^2B^2R^2}{2m}$

Answer: (D) $\frac{q^2B^2R^2}{2m}$ · The council's preliminary key

Q99 AP EAPCET 2023 · 17 May · Shift 2 MCQ

A wire loop of irregular shape carrying current is placed in an external magnetic field. If the wire is flexible, the shape of the loop changes to

(A) helical
(B) circular
(C) straight line
(D) parabolic

Answer: (B) circular · The council's preliminary key

Q100 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The distance moved by a charged particle along the magnetic field (the component of velocity is parallel to the magnetic field) in one rotation is given by

(m – mass of the particle, v – velocity of the particle, q – charge of the particle, B – magnetic field)

(A) $\frac{2\pi mv}{qB}$
(B) $\frac{\pi mv}{qB}$
(C) $\frac{4\pi mv}{qB}$
(D) $\frac{2\pi mv}{qB^2}$

Answer: (A) $\frac{2\pi mv}{qB}$ · The council's preliminary key

Q101 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A charged particle when enters a uniform magnetic field moves in a helical path. If its angular velocity is $4\pi \times 10^6$ rad s^{-1} and its velocity in the direction of magnetic field is 3×10^5 ms^{-1} then the pitch of the helix is

(A) 5 cm
(B) 10 cm
(C) 15 cm
(D) 20 cm

Answer: (C) 15 cm · The council's preliminary key

Q102 AP EAPCET 2023 · 16 May · Shift 1 MCQ

The force acting per unit length when a very long straight conductor is carrying a steady current of 1 A and the direction of the current is from south to north is

(The horizontal component of the earth's magnetic field at the place is 3×10^{-5} T and the direction of the field is from the geographical south to geographical north.)

(A) $3 \times 10^{-5}\ \mathrm{Nm}^{-1}$
(B) $1 \times 10^{-5}\ \mathrm{Nm}^{-1}$
(C) 0
(D) $1.5 \times 10^{-5}\ \mathrm{Nm}^{-1}$

Answer: (C) 0 · The council's preliminary key

EdLoop EAPCET

Q103 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A circular coil of 30 turns and radius 8 cm carrying a current of 6 A is suspended vertically in a uniform horizontal magnetic field of magnitude 1.0 T. The field lines make an angle of 30° with the normal of the coil. The magnitude of the counter torque that must be applied to prevent the coil from turning is

(A) 5.4 Nm
(B) 7.2 Nm
(C) 3.6 Nm
(D) 1.8 Nm

Answer: (D) 1.8 Nm · The council's preliminary key

Q104 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A galvanometer has a deflection of 25 divisions for a current of 0.1 A flowing through it. Then the current sensitivity of the galvanometer is

(A) 25 div/A
(B) 250 div/A
(C) 2.5 div/A
(D) 0.25 div/A

Answer: (B) 250 div/A · The council's preliminary key

Q105 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A magnetic field intensity at the centre of a circular wire of radius 0.1 m carrying a current 0.2 A is

(A) $2\pi \times 10^{-5}\,\mathrm{T}$
(B) $\pi \times 10^{-7}\,\mathrm{T}$
(C) $10^{-7}\,\mathrm{T}$
(D) $4\pi \times 10^{-7}\,\mathrm{T}$

Answer: (D) $4\pi \times 10^{-7}\,\mathrm{T}$ · The council's preliminary key

Q106 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A wire is first bent in the form of a circular coil of 5 turns and the same wire is then bent in the form of another circular coil of 10 turns. If same current is passed in both the coils, then the ratio of the magnetic fields at their centres is

(A) 1:8
(B) 1:1
(C) 1:2
(D) 1:4

Answer: (D) 1:4 · The council's preliminary key

Q107 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A solenoid has a core of a material with relative permeability 400. The windings of the solenoid are insulated from the core and carry a current of 4 A. If the number of turns is 500 per metre, then the magnetizing field is

(A) $2\pi \times 10^3\ \mathrm{Am}^{-1}$
(B) $1 \times 10^3\ \mathrm{Am}^{-1}$
(C) $4 \times 10^3\ \mathrm{Am}^{-1}$
(D) $2 \times 10^3\ \mathrm{Am}^{-1}$

Answer: (D) $2 \times 10^3\ \mathrm{Am}^{-1}$ · The council's preliminary key

Q108 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The magnetic force q [v x B] is

(A) parallel to both v and B
(B) perpendicular to v
(C) perpendicular to both v and B
(D) parallel to B

Answer: (C) perpendicular to both v and B · The council's preliminary key

Q109 TS EAMCET 2023 · 14 May · Shift 1 MCQ

It is found that a non-zero current element is unable to produce any magnetic field at a particular point. Then the angle between the current element and the position vector of that point with respect to the current element is

(A) must be 45°
(B) may be 0° or 180°
(C) must be 90°
(D) may be 30° or 60°

Answer: (B) may be 0° or 180° · The council's preliminary key

Q110 TS EAMCET 2023 · 14 May · Shift 1 MCQ

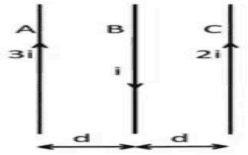
Three long, straight, parallel wires carrying different currents are arranged as shown in the diagram. In the given arrangement, let the net force per unit length on the wire 'C' be $\vec{F}$. If the wire 'B' is removed

without disturbing the other two wires, then the force per unit length on wire 'A' is

(see the figure above)

Three long, straight, parallel wires carrying different currents are arranged as shown in the diagram. In the given arrangement, let the net force per unit length on the wire 'C' be $\overline{F}$. If the wire 'B' is removed without disturbing the other two wires, then the force per unit length on wire 'A' is

పటంలో చూపిన విధంగా వేర్వేరు విద్యుత్ ప్రవాహాలు కలిగిన మూడు పొడవైన, తిన్నని, సమాంతర తీగలు అమర్చబడి ఉన్నాయి. ఇచ్చిన అమరికలో, 'C' తీగ యొక్క ఏకాంక పొడవు పై బలం $\overline{F}$ అనుకొనుము. ఇతర రెండు తీగలకు భంగం కలగకుండా తీగ 'B' ని తొలగించిన, తీగ 'A' యొక్క ఏకాంక పొడవు పై బలం



Options :

1. $-\overline{F}$
2. $3\overline{F}$
3. $2\overline{F}$
4. $-3\overline{F}$

(A) $-\vec{F}$
(B) $3\vec{F}$
(C) $2\vec{F}$
(D) $-3\vec{F}$

Answer: (D) $-3\vec{F}$ · The council's preliminary key

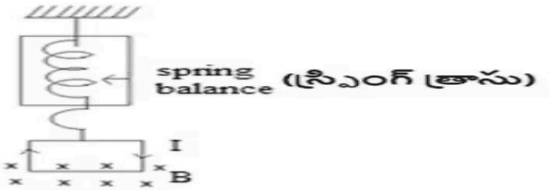
Q111 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A square loop of side 'a' and carrying a current 'I' is suspended from an insulating hanger of a spring balance as shown in the figure. The transverse magnetic field 'B' directed into the paper occurs only at the bottom side of the loop. When direction of current in the loop is reversed, the change in the reading of spring balance is

(see the figure above)

A square loop of side 'a' and carrying a current 'I' is suspended from an insulating hanger of a spring balance as shown in the figure. The transverse magnetic field 'B' directed into the paper occurs only at the bottom side of the loop. When direction of current in the loop is reversed, the change in the reading of spring balance is

భుజము 'a' మరియు విద్యుత్ ప్రవాహము 'I' గల ఒక చతురస్రాకార లూపును బంధక కొక్కెము గల ఒక స్ప్రింగ్ త్రాసుకు వటంలో చూపినట్లు వ్రేలాడదీసారు. లూపు అడుగు భుజము వద్ద మాత్రమే కాగితం లోపలి దిశలో గల తిర్యక్ అయస్కాంత క్షేత్రం 'B' ఉన్నది. లూపులో ప్రవాహ దిశను వ్యతిరేకము చేసిన స్ప్రింగ్ త్రాసు రీడింగ్ లో మార్పు



Options :

1. IaB
2. $2\,\mathrm{IaB}$
3. $\frac{\mathrm{IaB}}{2}$
4. $\frac{3}{2}\,\mathrm{IaB}$

(A) IaB

(B) $2IaB$

(C) $\frac{IaB}{2}$

(D) $\frac{3}{2}IaB$

Answer: (B) $2IaB$ · The council's preliminary key

Q112 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A current carrying loop is placed in a uniform magnetic field 'B' in different orientations I, II, III and IV as shown in the figure. The correct order of decreasing potential energy is

($\hat{n}$- unit vector normal to the plane of the loop)

(see the figure above)

: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

A current carrying loop is placed in a uniform magnetic field 'B' in different orientations I, II, III and IV as shown in the figure. The correct order of decreasing potential energy is

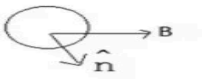
($\hat{n}$- unit vector normal to the plane of the loop)

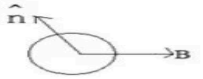
పటము నందు చూపిన విధంగా ఒక విద్యుత్ ప్రవాహమున్న లూపును వివిధ విన్యాసములు I, II, III, IV లో ఒక ఏకరీతి అయస్కాంత క్షేత్రం 'B' లో ఉంచారు. వాటి యొక్క స్థితిజ శక్తుల తగ్గుదల సరియైన క్రమము

($\hat{n}$- లూపు తలానికి లంబంగా ఉండు ఏకాంక సదిశ)

I) 

II) 

III) 

IV) 

Options :

1. I, III, II, IV
2. I, II, III, IV
3. I, IV, II, III
4. III, IV, I, II

(A) I, III, II, IV

(B) I, II, III, IV

(C) I, IV, II, III

(D) III, IV, I, II

Answer: (C) I, IV, II, III · The council's preliminary key

Q113 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A current 'i' is flowing through a wire of length 'L'. If it is made into a circular loop of one turn, then its magnetic moment is

(A) $\frac{L^2 i}{4\pi}$

(B) $\frac{L^2}{4\pi}$

(C) $\frac{4\pi}{L^2 i}$

(D) $4\pi L^2 i$

Answer: (A) $\frac{L^2 i}{4\pi}$ · The council's preliminary key

Q114 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A charge 'q' moves with a velocity $2\ \mathrm{ms}^{-1}$ along x-axis in a uniform magnetic field $\vec{B} = (2\hat{i} + 2\hat{j} + 3\hat{k})\ \mathrm{T}$, then charge will experience a force

(A) In y-z plane
(B) Along – y axis
(C) Along +z axis
(D) Along -z axis

Answer: (A) In y-z plane · The council's preliminary key

Q115 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A current i flows in an infinitely long, straight and thin walled pipe, then

(A) the magnetic field at all the points inside the pipe is same, but not zero
(B) the magnetic field at any point inside the pipe is zero
(C) the magnetic field is zero only on the axis of the pipe
(D) the magnetic field is different at different points inside the pipe

Answer: (B) the magnetic field at any point inside the pipe is zero · The council's preliminary key

Q116 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A closely wound solenoid of 80 cm long has 5 layers of windings of 400 turns each. The diameter of the solenoid is 1.8 cm. If the current carried is 8 A, then the magnitude of the magnetic field inside the solenoid near its centre is approximately

(A) 1.5×10^{-2} T
(B) 2.5×10^{-2} T
(C) 3.5×10^{-2} T
(D) 4.5×10^{-2} T

Answer: (B) 2.5×10^{-2} T · The council's preliminary key

Q117 TS EAMCET 2023 · 12 May · Shift 1 MCQ

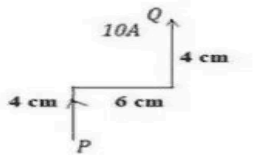
A conducting wire PQ carries a current 10 A as shown in the figure. It is placed in a uniform magnetic field 5 T which is acting normally outside from the paper. Then the net force experienced by it is

(see the figure above)

EdLoop EAPCET

A conducting wire PQ carries a current 10 A as shown in the figure. It is placed in a uniform magnetic field 5 T which is acting normally outside from the paper. Then the net force experienced by it is

PQ అను ఒక వాహక తీగ పటంలో చూపినట్లు 10 A విద్యుత్ ప్రవాహము కలిగిఉన్నది. దీనిని కాగితానికి లంబంగా బయటివైపుకు ఉన్న ఏకరీతి అయస్కాంత క్షేత్రం 5 T లో ఉంచారు. అయితే ఆ తీగ అనుభూతి చెందే నికర బలము



Options :

1. 0
2. 5 N
3. 30 N
4. 20 N

(A) 0
(B) 5 N
(C) 30 N
(D) 20 N

Answer: (B) 5 N · The council's preliminary key

Q118 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A long straight wire carries a current of 18 A. The magnitude of the magnetic field at a point 12 cm from it is

(A) 1.5×10^{-5} T
(B) 2×10^{-5} T
(C) 3×10^{-5} T
(D) 1.8×10^{-5} T

Answer: (C) 3×10^{-5} T · The council's preliminary key

Q119 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The magnetic field at a perpendicular distance of one metre from a wire carrying current of 1 A is

(A) 2×10^{-7} T
(B) 2×10^{-8} T
(C) 2×10^{-6} T
(D) 2×10^{-9} T

Answer: (A) 2×10^{-7} T · The council's preliminary key

Q120 TS EAMCET 2023 · 12 May · Shift 2 MCQ

A circular coil of area $2\ \text{cm}^2$ has 1000 turns. If the current through the coil is 1 A, then its magnetic moment is

(A) $4\ \text{Am}^2$
(B) $0.2\ \text{Am}^2$
(C) $0.4\ \text{Am}^2$
(D) $2\ \text{Am}^2$

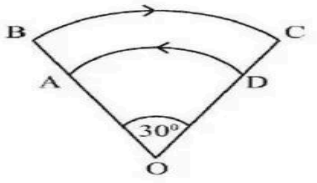
Answer: (B) $0.2\ \text{Am}^2$ · The council's preliminary key

Q121 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A current carrying loop ABCD has two circular arcs AD and BC with radius 1 cm and 2 cm respectively as shown in the figure. The two arcs AD and BC subtend a common angle 30° at the centre O. If the current flowing in the loop is $\frac{1.2}{\pi}$ A ,then the magnitude of net magnetic field at O is (Given $\mu_0 = 4\pi \times 10^{-7}$)

(see the figure above)

A current carrying loop ABCD has two circular arcs AD and BC with radius 1 cm and 2 cm respectively as shown in the figure. The two arcs AD and BC subtend a common angle 30° at the centre O. If the current flowing in the loop is $\frac{1.2}{\pi}$ A ,then the magnitude of net magnetic field at O is (Given $\mu_0 = 4\pi \times 10^{-7}$)



Options :

1. $0.5\ \mu\text{T}$
2. $3\ \mu\text{T}$
3. $1\ \mu\text{T}$
4. $1.5\ \mu\text{T}$

(A) 0.5 μT
(B) 3 μT
(C) 1 μT
(D) 1.5 μT

Answer: (C) 1 μT · The council's preliminary key

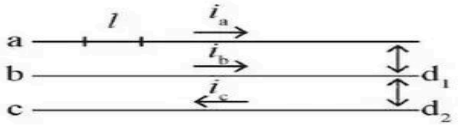
Q122 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Three parallel wires a, b and c carrying currents i_a, i_b and i_c as shown in the figure are placed next to each other.

(see the figure above)

The magnitude force on a length l of the wire a, if $d_2=2d_1$, $i_b = i_a$ and $i_c = 4i_a$ is

Three parallel wires a, b and c carrying currents i_a, i_b and i_c as shown in the figure are placed next to each other.



The magnitude force on a length l of the wire a, if $d_2=2d_1$, $i_b = i_a$ and $i_c = 4i_a$ is

Options :

1. $\frac{\mu_0}{6\pi d_1} i_a^2 l$
2. $\frac{\mu_0}{2\pi d_1} i_a^2 l$
3. $\frac{\mu_0}{4\pi d_1} i_a^2 l$
4. $\frac{\mu_0}{3\pi d_1} i_a^2 l$

(A) $\frac{\mu_0}{6\pi d_1} i_a^2 l$

(B) $\frac{\mu_0}{2\pi d_1} i_a^2 l$

(C) $\frac{\mu_0}{4\pi d_1} i_a^2 l$

(D) $\frac{\mu_0}{3\pi d_1} i_a^2 l$

Answer: (A) $\frac{\mu_0}{6\pi d_1} i_a^2 l$ · The council's preliminary key

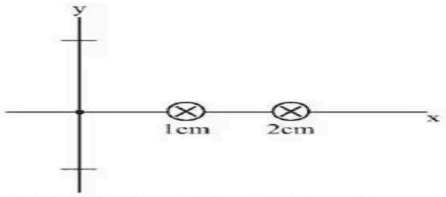
Q123 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Two infinitely long thin wires are placed at (1 cm, 0 cm) and (2 cm,0 cm) as shown in the figure.

(see the figure above)

The same current i flows in both the wires in the same direction, say, into the page. Let the magnetic field at the origin due to these wires is $\vec{B}$. If B_0 is the magnitude of the magnetic field if only the wire at (1cm, 0 cm) was present, then the value of B/B_0 is

Two infinitely long thin wires are placed at (1 cm, 0 cm) and (2 cm,0 cm) as shown in the figure.



The same current i flows in both the wires in the same direction, say, into the page. Let the magnetic field at the origin due to these wires is $\vec{B}$. If B_0 is the magnitude of the magnetic field if only the wire at (1cm, 0 cm) was present, then the value of B/B_0 is

Options :

1. 3/2
2. 2/3
3. 1/2
4. 2

(A) 3/2
(B) 2/3
(C) 1/2
(D) 2

Answer: (A) 3/2 · The council's preliminary key

Q124 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A toroid core has inner radius of 0.24 m and outer radius of 0.26 m. A current of 10 A flows through the wire having 2500 turns around it. Find the magnetic field inside the core of the toroid.

(A) $\pi \times 10^{-2}\,\mathrm{T}$
(B) $2\pi \times 10^{-2}\,\mathrm{T}$
(C) $2 \times 10^{-2}\,\mathrm{T}$
(D) $20 \times 10^{-2}\,\mathrm{T}$

Answer: (C) $2 \times 10^{-2}\,\mathrm{T}$ · The council's preliminary key

Q125 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A long solenoid with 10.0 turn/cm and a radius of 8 cm carries a current of 7 mA. A current carrying straight conductor is located along the central axis of the solenoid. If the direction of resulting magnetic field is 60° to axial direction at a point 5 cm from the axis of the solenoid along the radial direction, then the current in the conductor is
[Take $\sqrt{2} = 1.4, \sqrt{3} = 1.7$]

(A) 3.41 A
(B) 4.21 A
(C) 3.74 A
(D) 4.5 A

Answer: (C) 3.74 A · The council's preliminary key

Q126 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Statement I : A uniform electric field and a uniform magnetic field are pointed in the same direction. If an electron is projected in the same direction the electron velocity will decrease in magnitude.
Statement II : Two infinite long parallel wires are carrying current in the same direction. The magnetic field at a point midway between the wires is zero.
Statement III : No net force acts on a rectangular coil carrying a steady current when suspended in a uniform magnetic field.
Which of the following is correct?

(A) Statements I, II, III are true
(B) Statements I, II are true, but statement III is false
(C) Statements II, III are true, but statement I is false
(D) Statements I, II, III are false

Answer: (A) Statements I, II, III are true · The council's preliminary key

Q127 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Two parallel conductor each 50m long, separated by 0.2m experience a force of 1N. If the current in first conductor is twice that of the second conductor, then what is the current in the second conductor?
$(\mu_o = 4\pi \times 10^{-7})$

(A) 100 A
(B) 200 A
(C) 120 A
(D) 50 A

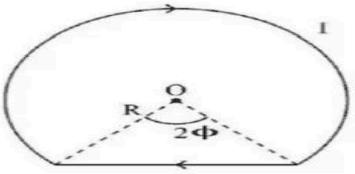
Answer: (A) 100 A · Checked by our team

Q128 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A current I = 5A flows along a thin wire shaped as shown in figure. The radius of curved part of the wire is equal to R = 100 mm, the angle $2\phi = 90^\circ$. The magnitude of magnetic field at the point O is approximately
[Use $\frac{\mu_0}{4\pi} = 10^{-7}\ \mathrm{TmA^{-1}}$]
(see the figure above)

A current $I = 5A$ flows along a thin wire shaped as shown in figure. The radius of curved part of the wire is equal to $R = 100$ mm, the angle $2\phi = 90°$. The magnitude of magnetic field at the point O is approximately

$\left[\text{Use } \frac{\mu_0}{4\pi} = 10^{-7}\,\text{TmA}^{-1}\right]$



Options :

1. $33.6\ \mu\text{T}$
2. $38.4\ \mu\text{T}$
3. $48.7\ \mu\text{T}$
4. $25.2\ \mu\text{T}$

(A) $33.6\ \mu\text{T}$
(B) $38.4\ \mu\text{T}$
(C) $48.7\ \mu\text{T}$
(D) $25.2\ \mu\text{T}$

Answer: (A) $33.6\ \mu\text{T}$ · The council's preliminary key

Q129 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A toroid has a core (non-ferro magnetic) of inner radius 24 cm and outer radius 26 cm around which 2000 turns of a wire is wound. If the current in the wire is 12 A, the magnetic field inside the core of the toroid is

(A) $1.92 \times 10^{-2}\ \text{T}$
(B) $1.88 \times 10^{-2}\ \text{T}$
(C) $2.12 \times 10^{-2}\ \text{T}$
(D) $1.98 \times 10^{-2}\ \text{T}$

Answer: (A) $1.92 \times 10^{-2}\ \text{T}$ · The council's preliminary key

Q130 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A horizontal wire carries 160 A current below which another wire of linear density 10 g /m carrying a current is kept at 4 cm distance. If the wire is kept below hangs in air, what is the current in this wire when the direction of current in both the wires is same?
(g = 10 m/s^2 and $\mu_0 = 4\pi \times 10^{-7}$)

(A) 125 A
(B) 140 A
(C) 110 A
(D) 100 A

Answer: (A) 125 A · The council's preliminary key

Q131 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A long solenoid has 70 turns/cm and carries current I. An electron moves within the solenoid in a circle of radius 2.5 cm perpendicular to the solenoid axis. If the speed of the electron is 4.4×10^6 m/s then the current I in the solenoid is
(Take $\mu_0 = 4\pi \times 10^{-7}$ SI unit, mass of electron = 9×10^{-31} kg, charge of electron = 1.6×10^{-19} C)

(A) 98.5 mA
(B) 112.5 mA
(C) 125 mA
(D) 175.0 mA

Answer: (B) 112.5 mA · The council's preliminary key

Q132 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A closely wound solenoid of length 1 m has 5 layers of 500 turns each. If the magnitude of magnetic field inside the solenoid near its centre is 4.4 mT, the current carried is

(A) $1.4\ \mathrm{A}$
(B) $1.5\ \mathrm{A}$
(C) $1.6\ \mathrm{A}$
(D) $1.8\ \mathrm{A}$

Answer: (A) $1.4\ \mathrm{A}$ · The council's preliminary key

Q133 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Two long wires carrying current is 8 A and 6 A along x axes and y axes respectively. The magnetic field at the point $(2\hat{i} + 4\hat{j})$ is
(Take $\mu_0 = 4\pi \times 10^{-7}$ SI unit)

(A) $1 \times 10^{-6}\ \mathrm{T}$
(B) $2 \times 10^{-6}\ \mathrm{T}$
(C) $1 \times 10^{-7}\ \mathrm{T}$
(D) $2 \times 10^{-7}\ \mathrm{T}$

Answer: (D) $2 \times 10^{-7}\ \mathrm{T}$ · The council's preliminary key

EdLoop EAPCET

Q134 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The magnitude of magnetic field at O due to a current carrying loop as shown in the figure is, where O is the centre of two circular portions with radii 1 cm and 2 cm respectively.

(Take the value of current $I = \frac{1.2}{\pi}$ A.)

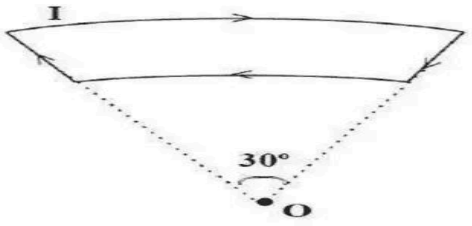
(see the figure above)

The magnitude of magnetic field at O due to a current carrying loop as shown in the figure is, where O is the centre of two circular portions with radii 1 cm and 2 cm respectively.

(Take the value of current $I = \frac{1.2}{\pi}$ A.)

పటంలో చూపిన విద్యుత్ ప్రవాహం గల లూప్ వలన బిందువు O వద్ద వీర్పడే అయస్కాంత క్షేత్రం ఎంత. లూప్ లో గల రెండు చాపములు O కేంద్రం గా వరుసగా 1 cm మరియు 2 cm వ్యాసార్ధము తో ఉన్నవి.

(లూప్ గుండా విద్యుత్ ప్రవాహం I = $\frac{1.2}{\pi}$ A.)



Options :

1. 10 nT
2. 0.1 nT
3. 100 μT
4. 1 nT

(A) $10\ \text{nT}$
(B) $0.1\ \text{nT}$
(C) $100\ \mu\text{T}$
(D) $1\ \text{nT}$

Answer: (B) $0.1\ \text{nT}$ · The council's preliminary key

Q135 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A long wire lies along x-axis and carries a current of 40 A in positive x - direction. A second long wire is perpendicular to the xy plane, passes through point $(3.0\ \text{m})\,\hat{j}$ and carries a current along positive z-direction. If the magnitude of resultant magnetic field at the point $(2.0\ \text{m})\,\hat{j}$ is 5×10^{-6} T, then the current in the second wire is

(Permeability of free space, $\mu_0 = 4\pi \times 10^{-7}$ SI unit)

(A) $30\ \text{A}$
(B) $15\ \text{A}$
(C) $25\ \text{A}$
(D) $7.5\ \text{A}$

Answer: (B) $15\ \text{A}$ · The council's preliminary key

Q136 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A particle of charge 1.0×10^{-16} C moves through a uniform magnetic field $\vec{B} = B_o(\hat{i} + 4\hat{j})$ T. The particle velocity at some instant is $\vec{V} = (2\hat{i} + 4\hat{j})\ \mathrm{m\,s^{-1}}$ and the magnetic force acting on it is $3 \times 10^{-16}\ \hat{k}$ N. The magnitude of B_o is

(A) 1.0 T
(B) 2.5 T
(C) 0.5 T
(D) 0.75 T

Answer: (D) 0.75 T · The council's preliminary key

Q137 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The magnetic field due to current carrying circular loop of radius 6 cm at a point on the axis at a distance of 8 cm from centre is $27\ \mu\mathrm{T}$. The magnetic field at the centre of the current carrying loop is.

(A) $75\ \mu\mathrm{T}$
(B) $125\ \mu\mathrm{T}$
(C) $150\ \mu\mathrm{T}$
(D) $250\ \mu\mathrm{T}$

Answer: (B) $125\ \mu\mathrm{T}$ · The council's preliminary key

Q138 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

An infinitely long wire carrying 1 A current in the +Z direction is placed at (1 cm, 1 cm). Another wire carrying 1 A in +x direction is placed at y = 1 cm. If the magnetic field due to this configuration at the origin is $\vec{B}$. Let B_o be the magnitude of the field if only the wire at (1 cm, 1 cm) was present, then $\frac{\vec{B}}{B_o}$ is

(A) $\left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}, -\sqrt{2}\right)$
(B) $\left(\frac{1}{2}, \frac{1}{2}, -1\right)$
(C) $\left(\sqrt{2}, \sqrt{2}, -\sqrt{2}\right)$
(D) $\left(\frac{1}{2\sqrt{2}}, \frac{1}{2\sqrt{2}}, -\frac{1}{2}\right)$

Answer: (A) $\left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}, -\sqrt{2}\right)$ · The council's preliminary key

Q139 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

An observer at rest experiences an electric field due to a static charge. Later he starts moving away from it then the observer experiences.

(A) Only magnetic field
(B) Only electric field
(C) Electric and magnetic field
(D) No field at all

Answer: (C) Electric and magnetic field · The council's preliminary key

Q140 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Two long parallel straight metal wires A and B carrying currents 12 A and 36 A respectively, in the same direction are separated by 50 cm. The point relative to A, where the resultant magnetic induction between the two wires due to the currents is zero, will be

(A) 90 cm
(B) 7.5 cm
(C) 28 cm
(D) 12.5 cm

Answer: (D) 12.5 cm · The council's preliminary key

Q141 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A long current carrying wire produces a magnetic field of 1 T at a distance of r. The magnetic field at (a) $\frac{r}{2}$ (b) 2r and (c) 3r is

(A) (a) 2T, (b) $= \frac{1}{2}$ T, (c) $= \frac{1}{3}$ T
(B) (a) 3T, (b) $= \frac{1}{3}$ T, (c) $= \frac{1}{6}$ T
(C) (a) $\frac{3}{2}$ T, (b) $= \frac{1}{4}$ T, (c) $= \frac{1}{8}$ T
(D) (a) $\frac{5}{2}$ T, (b) $= \frac{1}{2}$ T, (c) $= \frac{1}{3}$ T

Answer: (A) (a) 2T, (b) $= \frac{1}{2}$ T, (c) $= \frac{1}{3}$ T · The council's preliminary key

Q142 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Two infinitely long wires are placed at (1cm, 1cm) and (+1cm, −1cm) with 1A current in each and in the same directions perpendicular to x-y plane. Let the magnetic field due to these current carrying wires at the origin be $\vec{B}$. If B_o is the magnitude of the field if only one of them was present, then $\frac{|\vec{B}|}{B_o}$ is

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

Answer: (A) $\sqrt{2}$ · The council's preliminary key

Q143 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A particle of mass 1×10^{-27} kg and charge 1×10^{-16} C enters the uniform magnetic field within the solenoid, at speed $1000\ \mathrm{m\,s^{-1}}$. The velocity vector makes an angle 60° with the axis of solenoid. The solenoid has 5000 turns along its length and carries current 5 A. The number of revolutions the particle makes along the helical path within the solenoid by the time it emerges from solenoid's opposite end is

(A) 5×10^{5}
(B) 1×10^{6}
(C) $\pi \times 10^{5}$
(D) 3×10^{6}

Answer: (B) 1×10^{6} · The council's preliminary key

Q144 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

An electron having kinetic energy of 100 eV circulates in a path of radius 10 cm in a magnetic field. The magnitude of magnetic field $|\vec{B}|$ is approximately [Mass of electron $= 0.5\ \mathrm{MeV\,C^{-2}}$, where C is the velocity of light].

(A) $3.3 \times 10^{-4}\ \mathrm{T}$
(B) $2.6 \times 10^{-4}\ \mathrm{T}$
(C) $1.70 \times 10^{-4}\ \mathrm{T}$
(D) $4.3 \times 10^{-4}\ \mathrm{T}$

Answer: (A) $3.3 \times 10^{-4}\ \mathrm{T}$ · The council's preliminary key

Q145 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

A particle of mass 2.2×10^{-30} kg and charge 1.6×10^{-19} C is moving at a speed of $10\ \mathrm{km\,s^{-1}}$ in a circular path of radius 2.8 cm inside a solenoid. The solenoid has $25\ \frac{\mathrm{turns}}{\mathrm{cm}}$ and its magnetic field is perpendicular to the plane of the particle's path. The current in the solenoid is (Take $\mu_{\circ} = 4\pi \times 10^{-7}\ \mathrm{H\,m^{-1}}$)

(A) 1.25 mA
(B) 10.20 mA
(C) 2.50 mA
(D) 1.56 mA

Answer: (D) 1.56 mA · The council's preliminary key

Q146 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

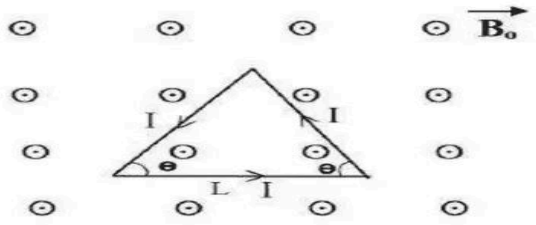
An isosceles triangular current carrying loop is kept perpendicularly in a uniform magnetic field $\vec{B}_o$ as shown in figure. The force on the loop due to magnetic field is

(see the figure above)

EdLoop EAPCET

An isosceles triangular current carrying loop is kept perpendicularly in a uniform magnetic field $\overline{B}_o$ as shown in figure. The force on the loop due to magnetic field is

ఒక సమద్విబాహు త్రిభుజాకార ఆకారంలో ఉన్న విద్యుత్ ప్రవహిస్తున్న లూప్ ను, ఏకరీతి అయస్కాంత క్షేత్రం $\overline{B}_o$ కు లంబంగా పటంలో చూపిన విధంగా ఉంచిరి. అయిన అయస్కాంత క్షేత్రం వలన ఆ లూప్ పై పనిచేయు బలం



Options :

1. $ILB_o \cos\theta$
2. $2ILB_o \cos\theta$
3. 0
4. $ILB_o \sin\theta$

(A) $ILB_o \cos\theta$

(B) $2ILB_o \cos\theta$

(C) 0

(D) $ILB_o \sin\theta$

Answer: (C) 0 · The council's preliminary key

Q147 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A charged particle is moving in a uniform magnetic field penetrates a layer of lead and thereby loses half of its kinetic energy, then the radius of curvature of its path is

(A) No change

(B) Reduced by $\frac{1}{2}$ times of its initial values

(C) Reduced to $\frac{1}{\sqrt{2}}$ times of its initial values

(D) Reduce to $\frac{1}{4}$ times of its initial values

Answer: (C) Reduced to $\frac{1}{\sqrt{2}}$ times of its initial values · The council's preliminary key

Q148 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Two infinitely long wires each carrying the same current and pointing in +y direction are placed in the x y - plane, at x = -2 cm and x = 1 cm. An electron is fired with speed U from the origin making an angle of $+45^\circ$ from the x - axis. The force on the electron at the instant it is fired is
[B_o is the magnitude of the field at origin due to the wire at x= 1 cm alone].

(A) $\frac{-eUB_o}{2\sqrt{2}}(\hat{i}-\hat{j})$
(B) $\frac{-eUB_o}{2}(\hat{i}-\hat{j})$
(C) $\frac{-eUB_o}{\sqrt{2}}(\hat{i}-\hat{j})$
(D) $-eUB_o(\hat{i}-\hat{j})$

Answer: (A) $\frac{-eUB_o}{2\sqrt{2}}(\hat{i}-\hat{j})$ · The council's preliminary key

Q149 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Two electrons, e_1 and e_2 of mass m and charge q are injected into the perpendicular direction of the magnetic field B such that the kinetic energy of e_1 is double than that of e_2. The relation of their frequencies of rotation, f_1 and f_2 is

(A) $f_1 = f_2$
(B) $f_1 = 2f_2$
(C) $2f_1 = f_2$
(D) $4f_1 = f_2$

Answer: (A) $f_1 = f_2$ · The council's preliminary key

Q150 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A toroid has a non ferromagnetic core of inner radius 24 cm and outer radius 25 cm, around which 4900 turns of a wire are wound. If the current in the wire is 12 A, the magnetic field inside the core of the toroid is

(A) 56 mT
(B) 54 mT
(C) 42 mT
(D) 48 mT

Answer: (D) 48 mT · The council's preliminary key

Q151 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

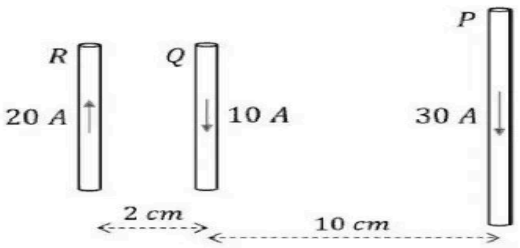
Three long, straight and parallel wires carrying currents are arranged as shown in figure. The force experienced by 10 cm length of wire 'Q' is _____

(see the figure above)

Mandatory : No

Three long, straight and parallel wires carrying currents are arranged as shown in figure. The force experienced by 10 cm length of wire 'Q' is _____

పటములో చూపిన విధముగా మూడు పొడవైన తిన్నని, సమాంతర తీగెలు గుండా విద్యుత్ ప్రవహించుచున్నది. అప్పుడు, 10 cm ల Q తీగపై పనిచేయు బలము _____



Options :

1. $1.4 \times 10^{-4}\ N$ towards the right
   $1.4 \times 10^{-4}\ N$ కుడివైపుకు
2. $1.4 \times 10^{-4}\ N$ towards the left
   $1.4 \times 10^{-4}\ N$ ఎడమవైపుకు
3. $2.6 \times 10^{-4}\ N$ towards the right
   $2.6 \times 10^{-4}\ N$ కుడివైపుకు
4. $2.6 \times 10^{-4}\ N$ towards the left
   $2.6 \times 10^{-4}\ N$ ఎడమవైపుకు

(A) $1.4 \times 10^{-4}\ N$ towards the right
(B) $1.4 \times 10^{-4}\ N$ towards the left
(C) $2.6 \times 10^{-4}\ N$ towards the right
(D) $2.6 \times 10^{-4}\ N$ towards the left

Answer: (C) $2.6 \times 10^{-4}\ N$ **towards the right** · The council's preliminary key

Q152 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

An electron having kinetic energy 'T' is moving in a circular orbit. If radius 'R' perpendicular to the uniform magnetic field in direction $\vec{B}$. If kinetic energy is doubled and magnetic field induction is tripled, the radius will become

(A) $R\sqrt{\frac{9}{4}}$
(B) $R\sqrt{\frac{3}{2}}$
(C) $R\sqrt{\frac{2}{9}}$
(D) $R\sqrt{\frac{4}{3}}$

Answer: (C) $R\sqrt{\frac{2}{9}}$ · The council's preliminary key

Q153 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

A tangent galvanometer has a coil of 50 turns and a radius of 20 cm. The horizontal component of earth's magnetic field is $3 \times 10^{-5}\ T$. What will be the current which gives a deflection of 45°?

(A) $\frac{3}{5\pi}\ A$
(B) $\frac{5}{3\pi}\ A$
(C) $\frac{3\pi}{5}\ A$
(D) $\frac{5\pi}{3}\ A$

Answer: (A) $\frac{3}{5\pi}\ A$ · The council's preliminary key

Q154 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A coil wrapped around toroid has inner radius of $20\ \text{cm}$ and an outer radius of $25\ \text{cm}$. If the wire wrapping makes 800 turns and carries a current of 12A. The maximum and minimum values of the magnetic field with in the toroid are _____

(A) $9.6\ \text{mT},\ 7.68\ \text{mT}$
(B) $4\ \text{mT},\ 2.5\ \text{mT}$
(C) $7\ \text{mT},\ 5.6\ \text{mT}$
(D) $6.6\ \text{mT},\ 3.3\ \text{mT}$

Answer: (A) $9.6\ \text{mT},\ 7.68\ \text{mT}$ · The council's preliminary key

Q155 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Two circular coils 1 and 2 are made from the same wire. The radius of the 1st coil is twice that of the second coil. What is the ratio of potential difference applied across them $\frac{V_1}{V_2}$ so that the magnetic field at their centers is the same?

(A) 3
(B) 4
(C) 6
(D) 2

Answer: (B) 4 · The council's preliminary key

Q156 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

A thin flexible wire of length 'L' is connected to two adjacent fixed points and carries a current 'I' in the clockwise direction as shown. When the system is put in a uniform magnetic field of strength 'B' going into the plane of the paper, the wire takes the shape of a circle. The tension in the wire, after acquiring the circular shape is

(see the figure above)

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Mandatory : No

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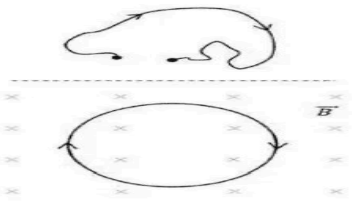
A thin flexible wire of length 'L' is connected to two adjacent fixed points and carries a current 'I' in the clockwise direction as shown. When the system is put in a uniform magnetic field of strength 'B' going into the plane of the paper, the wire takes the shape of a circle. The tension in the wire, after acquiring the circular shape is



పొడవు 'L' గల ఒక సన్నని వంగటానికి అనువైన తీగను రెండు స్థిరము గానున్న ప్రక్కప్రక్క బిందువుల మధ్య కలిపారు. తీగలో విద్యుత్ 'I' సవ్య దిశలో ప్రవహిస్తున్నది. ఆ వ్యవస్థ తలానికి వికరీతి లంబముగా కాగితములోనికి ఉన్న 'B' వీవ్రత గల వికరీతి అయస్కాంత క్షేత్రములో ఉంచినారు. అప్పుడు తీగ వృత్తము ఆకారమునకు వచ్చినది. తీగ లోని తన్యత _____

Options :

1. IBL
2. $\frac{IBL}{\pi}$
3. $\frac{IBL}{2\pi}$
4. $\frac{IBL}{4\pi}$

(A) IBL

(B) $\frac{IBL}{\pi}$

(C) $\frac{IBL}{2\pi}$

(D) $\frac{IBL}{4\pi}$

Answer: (C) $\frac{IBL}{2\pi}$ · The council's preliminary key

Q157 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A toroid of n turns, mean radius R and cross-sectional radius a carries current I. It is placed on a horizontal table taken as xy-plane. Its magnetic moment m _____

(A) is non–zero and points in the z-direction by symmetry

(B) points along the axis of the toroid ($m = m\phi$)

(C) is zero, otherwise there would be a field falling as $\frac{1}{r^3}$ at large distances outside the toroid

(D) is pointing radially outwards

Answer: (C) is zero, otherwise there would be a field falling as $\frac{1}{r^3}$ at large distances outside the toroid · The council's preliminary key

Q158 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The magnetic field due to current carrying a circular loop of radius $5\ cm$ at a point on the axis at a distance of $12\ cm$ from the center is $250\ \mu T$. The magnetic field at the center of the loop is _____

(A) $2529\ \mu T$
(B) $4394\ \mu T$
(C) $1759\ \mu T$
(D) $2908\ \mu T$

Answer: (B) $4394\ \mu T$ · The council's preliminary key

Q159 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

The coil of a moving coil galvanometer has an effective area of $4 \times 10^{-2}\ m^2$. It is suspended in a magnetic field of $5 \times 10^{-2}\ wbm^{-2}$. If the deflection in the galvanometer coil is 0.2 rad when a current of $5mA$ is passed through it, then

(A) Torsional constant is $8 \times 10^{-5}\ Nmrad^{-1}$
(B) Current sensitivity is $40\ rad\ A^{-1}$
(C) Torsional constant is $3 \times 10^{-3}\ Nmrad^{-1}$
(D) Current sensitivity is $40\ deg\ A^{-1}$

Answer: (B) Current sensitivity is $40\ rad\ A^{-1}$ · The council's preliminary key

Q160 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

A square frame of side 1 m carrying a current 'I' produces a magnetic field 'B' at its center. The same current is passed through a circular coil having the same perimeter as the square. The magnetic field at the center of the circular coil is B'. The ratio of $\frac{B}{B'}$ is _____

(A) $\frac{8}{\pi^2}$
(B) $\frac{8\sqrt{2}}{\pi^2}$
(C) $\frac{16}{\pi^2}$
(D) $\frac{16}{\sqrt{2}\pi^2}$

Answer: (B) $\frac{8\sqrt{2}}{\pi^2}$ · The council's preliminary key

Q161 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

A wire of length 'L' m carrying a current I amp is bent in the form of a circle. Magnitude of its magnetic moment is _____.

(A) $\frac{L^2I^2}{4\pi}$
(B) $\frac{L^2I}{4\pi}$
(C) $\frac{LI}{4\pi}$
(D) $\frac{LI^2}{4\pi}$

Answer: (B) $\frac{L^2I}{4\pi}$ · The council's preliminary key

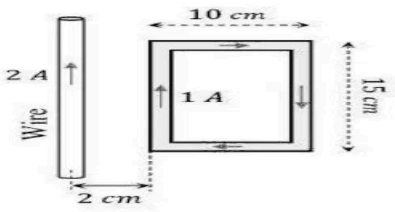
Q162 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

What is the net force on the square coil?
(see the figure above)

Mandatory : No

What is the net force on the square coil?

చతురస్రాకార తీగ చుట్ట మీద నికర బలము ఎంత?



Options :

1. $25 \times 10^{-7}\ N$ moving towards wire
$25 \times 10^{-7}\ N$ బలముతో తీగవైపు చలిస్తున్నది

2. $25 \times 10^{-7}\ N$ moving away from wire
$25 \times 10^{-7}\ N$ బలముతో తీగనుండి దూరముగా చలిస్తున్నది

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3. $35 \times 10^{-7}\ N$ moving towards wire
$35 \times 10^{-7}\ N$ బలముతో తీగవైపు చలిస్తున్నది

4. $35 \times 10^{-7}\ N$ moving away from wire
$35 \times 10^{-7}\ N$ బలముతో తీగనుండి దూరముగా చలిస్తున్నది

(A) $25 \times 10^{-7}\ N$ moving towards wire
(B) $25 \times 10^{-7}\ N$ moving away from wire
(C) $35 \times 10^{-7}\ N$ moving towards wire
(D) $35 \times 10^{-7}\ N$ moving away from wire

Answer: (A) $25 \times 10^{-7}\ N$ **moving towards wire** · The council's preliminary key

Q163 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Torque required to hold a small circular coil of 10 turns, $2 \times 10^{-4}\ m^2$ area and carrying $0.5\ A$ current is the (sic) middle of a long solenoid of 10^3 turns per meter carrying $3\ A$ current, with its axis perpendicular to the axis of the solenoid is _____

(A) $12\pi \times 10^{-7}\ Nm$
(B) $6\pi \times 10^{-7}\ Nm$
(C) $4\pi \times 10^{-7}\ Nm$
(D) $2\pi \times 10^{-7}\ Nm$

Answer: (A) $12\pi \times 10^{-7}\ Nm$ · The council's preliminary key

Q164 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Two concentric coils each of radius equal to $4\pi\ cm$ are placed at right angles to each other. If $10\ A$ and $24\ A$ are the currents flowing through the coils, respectively, the magnetic induction at the center of the coils will be _____

(A) $13 \times 10^{-5}\ wbm^{-2}$

(B) $12 \times 10^{-5}\ wbm^{-2}$

(C) $7 \times 10^{-5}\ wbm^{-2}$

(D) $5 \times 10^{-5}\ wbm^{-2}$

Answer: (A) $13 \times 10^{-5}\ wbm^{-2}$ · The council's preliminary key

Q165 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

In which of the following case no force exerted by a magnetic field on a charge?

(A) Moving with constant velocity

(B) Moving in a circle

(C) At rest

(D) Moving along a curved path

Answer: (C) At rest · The council's preliminary key

Q166 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

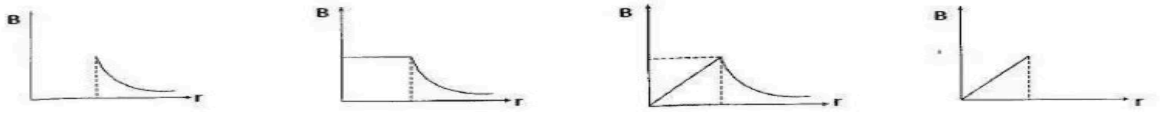
A long thin hollow metallic cylinder of radius R has a current i ampere. The magnetic induction B away from the axis at a distance 'r' from the axis varies as shown in

(see the figure above)

Mandatory : No

A long thin hollow metallic cylinder of radius R has a current i ampere. The magnetic induction B away from the axis at a distance 'r' from the axis varies as shown in

R వ్యాసార్ధము కలిగిన ఒక పలుచని టోలు లోహపు స్థూపము గుండా i ఆంపియర్ ల విద్యుత్ ప్రవహిస్తున్నది. దాని అక్షము నుండి 'r' దూరములో ఉన్న బిందువు వద్ద ఉండే అయస్కాంత ప్రేరణ 'B' ను ఈ క్రింది వానిలో ఏది సూచిస్తున్నది?



(i) (ii) (iii) (iv)

Options :

1. (i)
2. (ii)
3. (iii)
4. (iv)

(A) (i)
(B) (ii)
(C) (iii)
(D) (iv)

Answer: (A) (i) · The council's preliminary key

Q167 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

In a co-axial, straight cable, the central conductor and the outer conductor carry equal currents in opposite directions. The magnetic field is zero _____

(A) outside the cable
(B) inside the inner conductor
(C) inside the outer conductor
(D) in between the two conductors

Answer: (A) outside the cable · The council's preliminary key

Q168 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

The magnetic field, of a given length of wire for single turn coil, at its center is 'B'. then its value for two turns coil for the same wire is _____

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

Answer: (C) $4B$ · The council's preliminary key

Q169 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

Force acting on an electron moving with velocity $\vec{V}$ in a magnetic field $\vec{B}$ is (e is the charge of electron)

(A) $e(\vec{V} \times \vec{B})$
(B) $e(\vec{V}.\vec{B})$
(C) $e\frac{\vec{V}}{\vec{B}}$
(D) $e\frac{\vec{B}}{\vec{V}}$

Answer: (A) $e(\vec{V} \times \vec{B})$ · The council's preliminary key

Q170 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

Two circular coils P and Q are made of two identical wires of the same length. The number of turns in the P and Q are 4 and 2, respectively. The magnetic inductions at the centre of P and Q are B_p and

B_Q respectively. The ratio $\frac{B_p}{B_Q}$ is:

(A) 0.25
(B) 4
(C) 0.5
(D) 2

Answer: (B) 4 · The council's preliminary key

Q171 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A coil having 2000 turns is wound tightly in the form of a spiral with inner and outer radii $1\ \mathrm{cm}$ and $3\ \mathrm{cm}$ respectively. When a current $\frac{1}{\pi}\ \mathrm{mA}$ passes through the coil the magnetic field at the centre is calculated to be $K \ln 3 \times 10^{-6}\ \mathrm{T}$. The value of K is

(A) 20
(B) 10
(C) 15
(D) 25

Answer: (A) 20 · The council's preliminary key

Q172 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Two long parallel wires are separated by a distance of 2.50 cm. The force per unit length that each wire exerts on the other is 4×10^{-5} N/m, and the wires repel each other. The current in one wire is 0.5A. What is the current in the second wire? (Take $\mu_0 = 4\pi \times 10^{-7}$ SI Unit)

(A) 12 A
(B) 8 A
(C) 6 A
(D) 10 A

Answer: (D) 10 A · The council's preliminary key

Q173 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

What is the magnetic moment of orbiting electron in simple hydrogen atom? Assume e = charge of electron, m_e = Mass of electron and $\vec{L}$ = orbital angular momentum of electron

(A) $\vec{\mu} = \left(\frac{e}{m_e}\right)\vec{L}$
(B) $\vec{\mu} = \left(\frac{e}{2m_e}\right)\vec{L}$
(C) $\vec{\mu} = \left(\frac{2e}{m_e}\right)\vec{L}$
(D) $\vec{\mu} = \left(\frac{e}{4m_e}\right)\vec{L}$

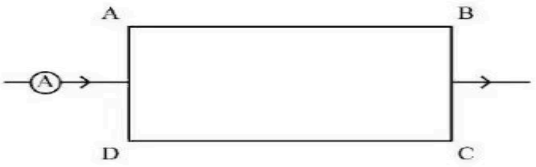
Answer: (B) $\vec{\mu} = \left(\frac{e}{2m_e}\right)\vec{L}$ · The council's preliminary key

Q174 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

ABCD is a rectangular loop made of uniform wire. If AD = BC = 2 cm, what is the magnetic force per unit length acting on wire DC due to wire AB if ammeter reads 20 A. (The length of AB and DC are large in comparison with other two sides)

(see the figure above)

ABCD is a rectangular loop made of uniform wire. If AD = BC = 2 cm, what is the magnetic force per unit length acting on wire DC due to wire AB if ammeter reads 20 A. (The length of AB and DC are large in comparison with other two sides)



Options :

1. $10^{-1}\ \mathrm{Nm}^{-1}$
2. $10^{-2}\ \mathrm{Nm}^{-1}$
3. $10^{-3}\ \mathrm{Nm}^{-1}$
4. $10^{-4}\ \mathrm{Nm}^{-1}$

(A) $10^{-1}\ \mathrm{Nm}^{-1}$
(B) $10^{-2}\ \mathrm{Nm}^{-1}$
(C) $10^{-3}\ \mathrm{Nm}^{-1}$
(D) $10^{-4}\ \mathrm{Nm}^{-1}$

Answer: (C) $10^{-3}\ \mathrm{Nm}^{-1}$ · The council's preliminary key

Q175 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

Given the fact that
A) Magnetic field exerts force only on a moving charge
B) Electric field exerts force on both stationary and moving charge
C) Magnetic field exerts force on charge moving parallel to the direction of the field.
Which of the following is true?

(A) A and C
(B) A and B
(C) B and C
(D) A, B and C

Answer: (B) A and B · The council's preliminary key

Q176 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A wire of length l carries a current I along the X- axis. The magnetic force acting on the wire is given by $\vec{F} = IB_0L(\hat{k} - \hat{j})$ T where B_0 is a constant. The existing magnetic field $\vec{B}$ is

(A) $B_0(\hat{i})$
(B) $B_0(\hat{i} + \hat{j} - \hat{k})$
(C) $B_0(\hat{i} + \hat{j} + \hat{k})$
(D) $B_0(\hat{i} - \hat{j} - \hat{k})$

Answer: (C) $B_0(\hat{i} + \hat{j} + \hat{k})$ · The council's preliminary key

Q177 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Two long wires with no contact are placed perpendicular to each other. i_1 and i_2 are currents flowing through these wires respectively. The magnetic force on a small length 'dl' of the second wire situated at a distance 'l' from first wire is proportional to

(A) $i_1 i_2$
(B) l
(C) $\frac{1}{i_1 i_2}$
(D) l^2

Answer: (A) $i_1 i_2$ · The council's preliminary key

Q178 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The force acting on a current carrying wire joining two fixed points A and B in a uniform magnetic field

(A) increases exponentially with increase in current
(B) is inversely proportional to the magnitude of the magnetic field
(C) is independent of the shape of the wire
(D) is parallel to the direction of the magnetic field

Answer: (C) is independent of the shape of the wire · The council's preliminary key

Q179 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

If the number of turns per unit length of a solenoid is doubled, what happens to the magnetic field in the solenoid?

(A) It remains unchanged
(B) It becomes half
(C) It doubles
(D) It quadruples

Answer: (C) It doubles · The council's preliminary key

Q180 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The magnetic field intensity (H) at the centre of a long solenoid carrying a current of 2 A, is found to be 1000 A/M. The number of turns per centimetre of the solenoid is
(Use $\mu_0 = 4\pi \times 10^{-7}$ TM/A)

(A) 500
(B) 50
(C) 5
(D) 100

Answer: (C) 5 · The council's preliminary key

Q181 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A small cube of side of 1 mm is placed at the centre of a circular loop of radius 20 cm. If the current in the loop is 2 A then the magnetic energy stored inside the cube is
(Assume $\mu_0 = 4\pi \times 10^{-7}$ SI units)

(A) 1.57×10^{-18} J
(B) 2.57×10^{-14} J
(C) 1.57×10^{-14} J
(D) 4.57×10^{-13} J

Answer: (C) 1.57×10^{-14} J · The council's preliminary key

Q182 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Figure shows an equilateral triangle ABC of side 'l' carrying currents as shown and placed in a uniform magnetic field 'B' perpendicular to the plane of triangle. The magnitude of magnetic forces on triangle is _____

(see the figure above)

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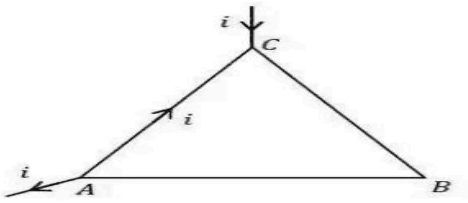
Figure shows an equilateral triangle ABC of side 'l' carrying currents as shown and placed in a uniform magnetic field 'B' perpendicular to the plane of triangle. The magnitude of magnetic forces on triangle is _____

'l' భుజము గల ABC అనే సమబాహు త్రిభుజము ను పటములో చూపబడిన విధముగా విద్యుత్ ప్రవాహస్తూ దాని తలమునకు లంబముగా 'B' అయస్కాంత క్షేత్రములో ఉంచబడినది. ఆ త్రిభుజములో అయస్కాంత బల పరిమాణము _____



Options :

1. ilB
2. $2ilB$
3. $3ilB$
4. 0

(A) ilB

(B) $2ilB$

(C) $3ilB$

(D) 0

Answer: (A) ilB · The council's preliminary key

Q183 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Magnetic lines of force due to a current in a circular conductor are _____

(A) parallel to the plane of the coil

(B) perpendicular to the plane of the coil at the center only

(C) perpendicular to the plane of the coil everywhere

(D) Zero

Answer: (B) perpendicular to the plane of the coil at the center only · The council's preliminary key

Q184 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Magnetic field dB to a current element at any point on its axis is _____

(A) minimum

(B) zero

(C) varies between minimum and maximum

(D) depends on the position of the point

Answer: (B) zero · The council's preliminary key

Q185 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

An electron having charge 1.6×10^{-19} C and mass 9×10^{-31} kg is moving with 4×10^{6} m.s^{-1} speed in a magnetic field 2×10^{-1} T in a circular orbit. The force acting on electron and the radius of the circular orbit is _____

(A) 12.8×10^{-13} N, 1.1×10^{-4} m
(B) 1.28×10^{-14} N, 1.1×10^{-3} m
(C) 1.28×10^{-13} N, 1.1×10^{-3} m
(D) 1.28×10^{-13} N, 1.1×10^{-4} m

Answer: (D) 1.28×10^{-13} N, 1.1×10^{-4} m · The council's preliminary key

Q186 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

When a helium nucleus makes a full rotation of a circle of radius 0.8 m in 2.5 seconds, the value of magnetic field B at the centre of the circle will be

(A) $4\pi \times 10^{-25}$ T
(B) $2\pi \times 10^{-26}$ T
(C) $4\pi \times 10^{-26}$ T
(D) $2\pi \times 10^{-25}$ T

Answer: (C) $4\pi \times 10^{-26}$ T · The council's preliminary key

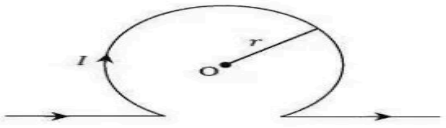
Q187 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

An infinitely long straight conductor is bent in to shape as shown in figure. It carries a current I A and the radius of circular loop is r m. The magnetic induction at the centre of the circular loop is *(see the figure above)*

Orientation : Vertical

An infinitely long straight conductor is bent in to shape as shown in figure. It carries a current I A and the radius of circular loop is r m. The magnetic induction at the centre of the circular loop is

అనంత పొడవు ఉన్న తిన్నని వాహకాన్ని పటములో చూపిన విధంగా వంచారు. తీగలో ప్రవహించే విద్యుత్ I A. వృత్తాకార ఉచ్చు వ్యాసార్ధం r m. అయిన వృత్తాకార ఉచ్చు కేంద్రం వద్ద అయస్కాంత ప్రేరణ ఎంత?



Options :

1. $\frac{\mu_0 I (\pi - 1)}{2\pi r}$

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2. $\frac{\mu_0 I (\pi + 1)}{2\pi r}$
3. $\frac{\mu_0 I (2\pi - 1)}{2\pi r}$
4. $\frac{\mu_0 I (2\pi + 1)}{2\pi r}$

(A) $\frac{\mu_0 I(\pi-1)}{2\pi r}$
(B) $\frac{\mu_0 I(\pi+1)}{2\pi r}$
(C) $\frac{\mu_0 I(2\pi-1)}{2\pi r}$
(D) $\frac{\mu_0 I(2\pi+1)}{2\pi r}$

Answer: (A) $\frac{\mu_0 I(\pi-1)}{2\pi r}$ · The council's preliminary key

Q188 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Figure shows the cross-sectional view of the hollow cylindrical conductor with inner radius 'R' and outer radius '2R', carrying uniformly distributed current i along its axis. The magnetic induction at point 'P' at a distance $3R/2$ from the axis of the cylinder will be *(see the figure above)*

Orientation : Vertical

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Figure shows the cross-sectional view of the hollow cylindrical conductor with inner radius 'R' and outer radius '$2R$', carrying uniformly distributed current i along its axis. The magnetic induction at point 'P' at a distance $3R/2$ from the axis of the cylinder will be

$3R/2$ R $2R$ P

Options :
1. Zero
2. $\frac{5\mu_0 i}{72\pi R}$
3. $\frac{7\mu_0 i}{18\pi R}$
4. $\frac{5\mu_0 i}{36\pi R}$

(A) Zero
(B) $\frac{5\mu_0 i}{72\pi R}$
(C) $\frac{7\mu_0 i}{18\pi R}$
(D) $\frac{5\mu_0 i}{36\pi R}$

Answer: (D) $\frac{5\mu_0 i}{36\pi R}$ · The council's preliminary key

Q189 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Choose the wrong statement to complete: An ideal solenoid has _____

(A) the turns widely separated
(B) the turns closely wound
(C) the length is very much greater than the radius
(D) the magnetic field inside almost uniform

Answer: (A) the turns widely separated · The council's preliminary key

Q190 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

When a helium nucleus covers a circle of radius $0.8\,\mathrm{m}$ in 2 seconds, find the value of magnetic field B at the centre of the circle.

(A) $\frac{10^{-19}}{\mu_0}$
(B) $\mu_0 \times 10^{-19}$
(C) $2\,\mu_0 \times 10^{-10}$
(D) $\frac{2\times10^{-19}}{\mu_0}$

Answer: (B) $\mu_0 \times 10^{-19}$ · The council's preliminary key

Q191 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

A proton enters a magnetic field of flux density $1.5\,\mathrm{Wb.m^{-2}}$ with a velocity of $2 \times 10^7\,\mathrm{m.s^{-1}}$ at an angle of 30° with the field. The force on the proton will be

(A) $2.4 \times 10^{-12}\,N$
(B) $24 \times 10^{-12}\,N$
(C) $0.24 \times 10^{-12}\,N$
(D) $0.024 \times 10^{-12}\,N$

Answer: (A) $2.4 \times 10^{-12}\,N$ · The council's preliminary key

Q192 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

A proton moving with a velocity, $2.5 \times 10^7\,\mathrm{m/sec}$, enters a magnetic field of intensity $2.5\,\mathrm{T}$ making an angle 30° with the magnetic field. The force on the proton is

(A) $3 \times 10^{-12}\,\mathrm{N}$
(B) $5 \times 10^{-12}\,\mathrm{N}$
(C) $6 \times 10^{-12}\,\mathrm{N}$
(D) $9 \times 10^{-12}\,\mathrm{N}$

Answer: (B) $5 \times 10^{-12}\,\mathrm{N}$ · The council's preliminary key

Q193 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

A horizontal overhead powerline at a height of $5\,\mathrm{m}$ from the ground and carries a current of $150\,\mathrm{A}$ from East to West. The magnetic field directly below it on ground is

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(A) $6 \times 10^{-6}\,\mathrm{T}$ towards South
(B) $6 \times 10^{-6}\,\mathrm{T}$ towards West
(C) $7 \times 10^{-6}\,\mathrm{T}$ towards East
(D) $8 \times 10^{-7}\,\mathrm{T}$ towards North

Answer: (A) $6 \times 10^{-6}\,\mathrm{T}$ **towards South** · The council's preliminary key

Q194 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

A charge $q\,C$ moving in a circle of radius 'r' m makes n revolutions per second. Magnetic field at the centre of the circle is _____

(A) $\frac{2\pi q}{nr} \times 10^{-7}\,\mathrm{N.amp^{-1}.m^{-1}}$
(B) $\frac{2\pi q}{r} \times 10^{-7}\,\mathrm{N.amp^{-1}.m^{-1}}$
(C) $\frac{2\pi nq}{r} \times 10^{-7}\,\mathrm{N.amp^{-1}.m^{-1}}$
(D) $\frac{2\pi q}{r}\,\mathrm{N.amp^{-1}.m^{-1}}$

Answer: (C) $\frac{2\pi nq}{r} \times 10^{-7}\,\mathrm{N.amp^{-1}.m^{-1}}$ · The council's preliminary key

Q195 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

If B_1 is the magnetic field induction at a point on the axis of a circular coil of radius R situated at distance $R\sqrt{3}$ and B_2 is the magnetic field at the center of the coil, then the ratio of $\frac{B_1}{B_2}$ is equal to

(A) $\frac{1}{3}$
(B) $\frac{1}{8}$
(C) $\frac{1}{4}$
(D) $\frac{1}{2}$

Answer: (B) $\frac{1}{8}$ · The council's preliminary key

Q196 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

A straight wire carrying current ' i ' is turned into a circular loop. If the magnitude of magnetic moment associated with it in M.K.S. units is M, the length of wire will be _____

(A) $4\pi iM$
(B) $\sqrt{\frac{4\pi M}{i}}$
(C) $\sqrt{\frac{4\pi i}{M}}$
(D) $\frac{M\pi}{4i}$

Answer: (B) $\sqrt{\frac{4\pi M}{i}}$ · The council's preliminary key

Q197 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

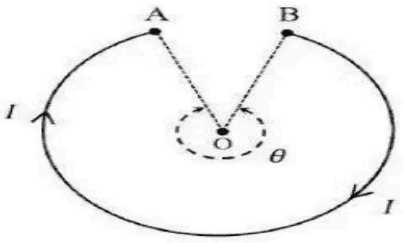
A current 'I' A flows in a circular arc of radius 'r' subtending an angle 'θ' as shown in the figure. Find the magnetic field at the center O of the circle.

(see the figure above)

Orientation : Vertical

A current 'I' A flows in a circular arc of radius 'r' subtending an angle 'θ' as shown in the figure. Find the magnetic field at the center O of the circle.

పటములో చూపిన విధముగా 'I' A విద్యుత్ ప్రవహిస్తున్న 'r' వ్యాసార్ధము,'θ' కోణము గల ఒక వృత్తాకార చాపం యొక్క కేంద్రము O వద్ద ఏర్పడే అయస్కాంత క్షేత్రము తెలుపుము.



Options :

1. $\frac{\mu_o I\theta}{4\pi r}$
2. $\frac{2\mu_o I.\sin\theta}{4\pi r}$
3. $\frac{2\mu_o I.\sin\theta}{2r}$
4. $\frac{2\mu_o I.\sin\theta}{4r}$

(A) $\frac{\mu_o I\theta}{4\pi r}$
(B) $\frac{2\mu_o I.\sin\theta}{4\pi r}$
(C) $\frac{2\mu_o I.\sin\theta}{2r}$
(D) $\frac{2\mu_o I.\sin\theta}{4r}$

Answer: (A) $\frac{\mu_o I\theta}{4\pi r}$ · The council's preliminary key

Q198 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

Given figure shows the north and south poles of a permanent magnet in which an 'n' turn coil of cross-sectional area 'A' is resting, such that, when a current 'I' is passed through the coil, the plane of the coil makes an angle 'θ' with respect to direction of magnetic field 'B'. If the plane of magnetic field and the coil are horizontal and vertical respectively, the torque on the coil will be

(A) $nIAB\ \cos\theta$
(B) $nIAB\ \sin\theta$
(C) $nIAB$
(D) None of the above since the magnetic field is radial

Answer: (C) $nIAB$ · The council's preliminary key

Q199 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

Two similar coils which are separated by 2m are having radius of 1m and 80 turns have a common axis. Calculate the strength of magnetic field at a point midway between them on their common axis when a current is 0.2 A.

(A) $0.04\sqrt{2}$
(B) $\sqrt{2}$
(C) $\frac{0.04}{\sqrt{2}}$
(D) $\frac{\sqrt{2}}{0.04}$

Answer: (A) $0.04\sqrt{2}$ · Official TGCHE final key

Q200 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A particle of mass m and charge Q moving with a speed in a circular path of radius R has magnetic moment μ. If the mass of the particle is doubled and maintains the same speed while revolving in the same circular path then the magnetic moment will be.

(A) doubled
(B) halved
(C) tripled
(D) unchanged

Answer: (D) unchanged · Official TGCHE final key

Q201 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

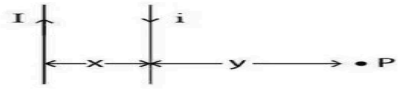
Two infinite wires carrying opposite electrical currents I and i are placed a distance x apart. A point P at a distance y away from the wire carrying current i is shown in the figure. If the magnetic field is zero at point P then the magnitude of i is

(see the figure above)

Question Number : 109 Question Id : 7196501389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Two infinite wires carrying opposite electrical currents I and i are placed a distance x apart. A point P at a distance y away from the wire carrying current i is shown in the figure. If the magnetic field is zero at point P then the magnitude of i is

x – దూరంలో ఉంచబడిన రెండు పొడవైన (infinite) తీగలలో విద్యుత్ ప్రవాహాలు I మరియు i లు వ్యతిరేక దిశలో ప్రవహిస్తున్నాయి. i విద్యుత్ ప్రవాహము కలిగి ఉన్న తీగకు y – దూరంలో 'P' బిందువు ఉన్నట్లు పటంలో చూపించారు. P వద్ద అయస్కాంత క్షేత్ర విలువ సున్నా అయితే, i పరిమాణం



Options :

1. $I\left(\frac{x}{x+y}\right)$
2. $I\left(\frac{2x}{x+y}\right)$
3. $I\left(\frac{y}{x+y}\right)$
4. $I\left(\frac{2y}{x+y}\right)$

(A) $\mathrm{I}\left(\frac{x}{x+y}\right)$

(B) $\mathrm{I}\left(\frac{2x}{x+y}\right)$

(C) $\mathrm{I}\left(\frac{y}{x+y}\right)$

(D) $\mathrm{I}\left(\frac{2y}{x+y}\right)$

Answer: (C) $\mathrm{I}\left(\frac{y}{x+y}\right)$ · Official TGCHE final key

Q202 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A solenoid of length $2\ \mathrm{m}$ carries a current of 20 Ampere. The diameter of the solenoid is 3cm. If the magnetic field inside the solenoid is 20mT, then the length of wire forming the solenoid is (Assume $\mu_0 = 4\pi \times 10^{-7}\ \mathrm{H/m}$)

(A) $100\ \mathrm{m}$

(B) $125\ \mathrm{m}$

(C) $175\ \mathrm{m}$

(D) $150\ \mathrm{m}$

Answer: (D) $150\ \mathrm{m}$ · Official TGCHE final key

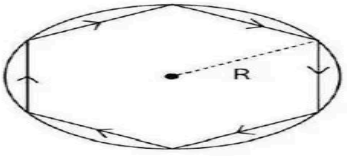
Q203 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A conducting wire is in the shape of a regular hexagon which is inscribed inside an imaginary circle of radius R. If a current I flows the wire, the magnitude of magnetic field at the centre of the circle is *(see the figure above)*

Question Number : 109 Question Id : 719650909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A conducting wire is in the shape of a regular hexagon which is inscribed inside an imaginary circle of radius R. If a current I flows the wire, the magnitude of magnetic field at the centre of the circle is

పటకొణ రూపంలో ఉన్న ఒక వాహకపు తీగ, R వ్యాసార్ధం కలిగిన ఊహాజనిత వృత్తములో నివృతమై ఉంది. తీగలోని ప్రవహించే విద్యుత్ ప్రవాహం I అయినట్లయితే, వృత్త కేంద్రం వద్ద ఆయస్కాంత క్షేత్ర పరిమాణం



Options :

1. $\frac{\mu_0 J}{2\sqrt{3}\pi R}$

2. $\frac{\sqrt{3}\mu_0 J}{2\pi R}$

3. $\frac{3\mu_0 J}{2\pi R}$

4. $\frac{\sqrt{3}\mu_0 J}{\pi R}$

(A) $\frac{\mu_0 J}{2\sqrt{3}\,\pi R}$
(B) $\frac{\sqrt{3}\,\mu_0 J}{2\pi R}$
(C) $\frac{3\,\mu_0 J}{2\pi R}$
(D) $\frac{\sqrt{3}\,\mu_0 J}{\pi R}$

Answer: (D) $\frac{\sqrt{3}\,\mu_0 J}{\pi R}$ · Official TGCHE final key

Q204 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A coil having 100 turns is wound tightly in the form of a spiral with inner and outer radii 1 cm and 2 cm respectively. When a current 1A passes through the coil, the magnetic field at the centre of the coil is

(A) $2\pi\ \ln(2)$ mT
(B) $\frac{\pi}{2}\ \ln(2)$ mT
(C) $\pi\ \ln(2)$ mT
(D) $\sqrt{2}\pi\ \ln(2)$ mT

Answer: (A) $2\pi\ \ln(2)$ **mT** · Official TGCHE final key

Q205 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

In the Bohr model an electron of mass m moves in a circular orbit around the proton. Considering the orbiting electron to be a circular current loop, the magnetic moment of the hydrogen atom, when the electron is in n^{th} excited state, is:
(Assume h = Planck's constant)

(A) $\left(\frac{e}{2m}\,\frac{n^2h}{2\pi}\right)$
(B) $\left(\frac{e}{m}\right)\frac{nh}{2\pi}$
(C) $\left(\frac{e}{2m}\right)\frac{nh}{2\pi}$
(D) $\left(\frac{e}{m}\right)\frac{n^2h}{2\pi}$

Answer: (C) $\left(\frac{e}{2m}\right)\frac{nh}{2\pi}$ · Official TGCHE final key

Q206 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A straight wire of mass $0.2\,\mathrm{kg}$ and length $1.5\,\mathrm{m}$ carries a current $2\mathrm{A}$ is shown in the figure. It is suspended in mid-air by a uniform magnetic field B pointing to the plane of paper. The magnitude of magnetic field is nearly?
(Ignore earth's magnetic field and assume $\mathrm{g} = 10\,\mathrm{m/s^2}$).
(see the figure above)

Question Number : 109 Question Id : 7196501069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A straight wire of mass 0.2 kg and length 1.5 m carries a current 2A is shown in the figure. It is suspended in mid-air by a uniform magnetic field B pointing to the plane of paper. The magnitude of magnetic field is nearly?
(Ignore earth's magnetic field and assume g = 10 m/s^2).

పటంలో చూపినట్లు 0.2 kg ద్రవ్యరాశి మరియు 1.5 m పొడవు గల ఒక తీగ్నని తీగ గుండా ప్రవహించే విద్యుత్ 2A. దీనిని పేపరు తలంలోనికి సూచిస్తున్న అయస్కాంత క్షేత్రము B లో గాలి మధ్యన వ్రేలాడదీయబడినది. ఇంచుమించుగా అయస్కాంత క్షేత్ర పరిమాణము ఎంత వుంటుంది.
(g = 10 m/s^2 గా తీసుకుందాము మరియు భూమి యొక్క అయస్కాంత క్షేత్రమును విస్మరించండి).



Options :

1. 0.55 T
2. 0.67 T
3. 0.75 T
4. 0.85 T

(A) $0.55\,\mathrm{T}$
(B) $0.67\,\mathrm{T}$
(C) $0.75\,\mathrm{T}$
(D) $0.85\,\mathrm{T}$

Answer: (B) $0.67\,\mathrm{T}$ · Official TGCHE final key

Q207 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The ratio of the magnetic field inside a solenoid at an axial point well inside and at an axial end point is

(A) 2
(B) $1/2$
(C) 1
(D) $3/2$

Answer: (A) 2 · Official TGCHE final key

Q208 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A solenoid has a core of a material with relative permeability $\frac{800}{\pi}$. The windings of the solenoid are insulated from the core and carry current of $2\mathrm{A}$. If the number of turns is 1000 per metre, find the magnetic field B.

(A) $640\,\mathrm{mT}$

(B) $330\,\mathrm{mT}$

(C) $480\,\mathrm{mT}$

(D) $560\,\mathrm{mT}$

Answer: (A) $640\,\mathrm{mT}$ · Official TGCHE final key

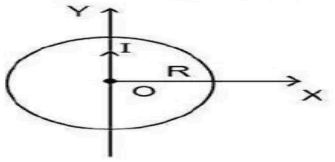
Q209 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

An infinite long wire lying along the Y-axis, is carrying a current I as shown in the figure. The magnetic flux through a circular loop of radius R in the XY- plane is
[Assume μ_0 = magnetic in free space permeability]
(see the figure above)

Question Number : 112 Question Id : 7196501072 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

An infinite long wire lying along the Y-axis, is carrying a current I as shown in the figure. The magnetic flux through a circular loop of radius R in the XY- plane is
[Assume μ_0 = magnetic in free space permeability]

పటంలో చూపినట్లు అనంత పొడవు కలిగిన ఒక తీగలో Y-అక్షము వెంబడి విద్యుత్ I ప్రవహిస్తుంది. XY- తలములో గల R వ్యాసార్ధము కలిగిన ఒక వృత్తాకార వలయం గుండా ప్రవహించే అయస్కాంత అభివాహము విలువ
[అనుకోండి μ_0 = స్వచ్ఛాంతరాళం యొక్క అయస్కాంత ప్రవేశ్యశీలత]



Options :

1. $\frac{\mu_0 I}{2\pi R}$
2. $\mu_0 IR$
3. $\frac{\mu_0 I}{\pi R^2}$
4. $\mu_0 I \pi R^2$

(A) $\frac{\mu_0 I}{2\pi R}$

(B) $\mu_0 \mathrm{IR}$

(C) $\frac{\mu_0 I}{\pi R^2}$

(D) $\mu_0 I \pi R^2$

Options (1) or (2) or (3) or (4) were accepted. More than one answer was accepted. · Official TGCHE final key

Q210 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A circular coil of 10 turns and radius 10 cm is placed in a uniform magnetic field of 0.1 T normal to the plane of the coil. If the current in the coil is 5A then the magnitude of the torque on the coil is

(A) 500π N m
(B) 0.05π N m
(C) 0.005π N m
(D) zero

Answer: (D) zero · Official TGCHE final key

Q211 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A 50 cm long solenoid has winding of 400 turns. What current must pass through it to produce a magnetic field of induction $4\pi \times 10^{-3}$ T at the center?

(A) 10.5 A
(B) 12.5 A
(C) 25.0 A
(D) 20.0 A

Answer: (B) 12.5 A · Official TGCHE final key

Q212 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A particle of charge q and mass m moves in a circular orbit of radius r with angular speed ω. The ratio of the magnitude of its magnetic moment to that of its angular momentum is

(A) $\frac{q}{m\,\omega}$
(B) $\frac{q}{2\,m\,r}$
(C) $\frac{q}{2m}$
(D) $\frac{2q}{m}$

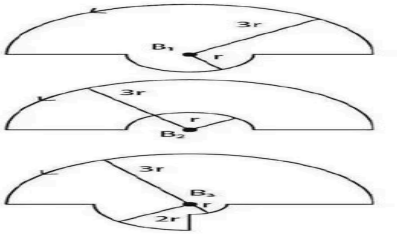
Answer: (C) $\frac{q}{2m}$ · Official TGCHE final key

Q213 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

Figure below shows three circuits consisting of concentric circular arcs and straight radial lines. The center of the circle is shown by the dot. Same current flows through each of the circuits. If B_1, B_2, B_3 are the magnitudes of the magnetic field at the center. Which of the following is true?
(see the figure above)

Question Number : 189 Question Id : 7196580269 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Figure below shows three circuits consisting of concentric circular arcs and straight radial lines. The center of the circle is shown by the dot. Same current flows through each of the circuits. If B_1, B_2, B_3 are the magnitudes of the magnetic field at the center. Which of the following is true?



Options :

1. $B_1 > B_2 > B_3$
2. $B_1 > B_3 > B_2$
3. $B_3 > B_1 > B_2$
4. $B_3 > B_2 > B_1$

(A) $B_1 > B_2 > B_3$
(B) $B_1 > B_3 > B_2$
(C) $B_3 > B_1 > B_2$
(D) $B_3 > B_2 > B_1$

Answer: (B) $B_1 > B_3 > B_2$ · Official TGCHE final key

Q214 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A charged particle moves through a magnetic field perpendicular to its direction. Then

(A) kinetic energy changes but the momentum is constant
(B) the momentum changes but the kinetic energy is constant
(C) both momentum and kinetic energy of the particle are not constant
(D) both momentum and kinetic energy of the particle are constant

Answer: (B) the momentum changes but the kinetic energy is constant · Official TGCHE final key

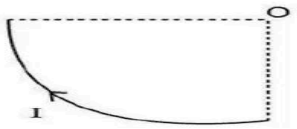
Q215 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A current I flows in a straight wire bent in the shape of a quarter ring of radius R as shown in figure. The magnetic field induction (B) at point O is *(see the figure above)*

Question Number : 109 Question Id : 719650429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A current I flows in a straight wire bent in the shape of a quarter ring of radius R as shown in figure. The magnetic field induction (B) at point O is

పటములో చూపినట్లు ఒక తిన్నని తీగను R వ్యాసార్ధము గల ఒక వలయం ఆకారంలో నాల్గవ వంతు వుండునట్లు వంచినారు. దీని గుండా పోవు విద్యుత్ ప్రవాహము I. అయితే O బిందువు వద్ద అయస్కాంత క్షేత్ర పరణము (B) విలువ ఎంత



Options :

1. $\frac{\mu_o I}{4R}$
2. $\frac{\mu_o I}{8R}$
3. $\frac{\mu_o I}{2R}$
4. $\frac{\mu_o I}{6R}$

(A) $\frac{\mu_0 I}{4R}$
(B) $\frac{\mu_0 I}{8R}$
(C) $\frac{\mu_0 I}{2R}$
(D) $\frac{\mu_0 I}{6R}$

Answer: (B) $\frac{\mu_0 I}{8R}$ · Official TGCHE final key

Q216 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A particle of mass m and charge q is moving in a cyclotron with magnetic field B. The frequency of the circular motion of the particle is proportional to:

(A) $\frac{qB}{m}$
(B) $\frac{2m}{qB}$
(C) $\frac{mB}{q}$
(D) $\frac{mq}{B}$

Answer: (A) $\frac{qB}{m}$ · Official TGCHE final key

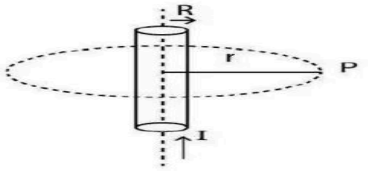
Q217 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The magnetic field at point P of given figure due to carrying of current I by a conductor of radius R, is *(see the figure above)*

Question Number : 112 Question Id : 719650432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The magnetic field at point P of given figure due to carrying of current I by a conductor of radius R, is

R వ్యాసార్ధము కలిగిన ఒక వాహకము గుండా పటంలో చూపినట్లు విద్యుత్ I ప్రవహిస్తుంది. ఈ విద్యుత్ వలన P బిందువు వద్ద ఏర్పడే అయస్కాంత క్షేత్రము



Options :

1. $\frac{\mu_0 I}{4\pi r}$
2. $\frac{\mu_0 I}{2\pi r}$
3. $\frac{\mu_0 I}{2\pi R}$
4. $\frac{\mu_0 I}{4\pi R}$

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

Answer: (B) $\frac{\mu_0 I}{2\pi r}$ · Official TGCHE final key

Q218 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Two particles carrying equal charges move parallel to each other with speed 150 km/s. If $\vec{F}_1$ and $\vec{F}_2$ are magnetic and electric forces between two charged particles then, $\frac{|\vec{F}_1|}{|\vec{F}_2|}$ is

(Let $\mu_0\epsilon_0 = \frac{1}{9\times10^{16}}\ \mathrm{s^2/m^2}$)

(A) 1.0×10^{-6}
(B) 1.5×10^{-7}
(C) 3.0×10^{-6}
(D) 2.5×10^{-7}

Answer: (D) 2.5×10^{-7} · Official TGCHE final key

Q219 TS EAMCET 2019 · 6 May · Shift 1 MCQ

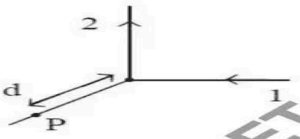
A very long wire carrying a current $4\sqrt{2}$ A is bent at right angles. The magnitude of magnetic field ($|\vec{B}|$) at a point 'P' lying on a line perpendicular to the bent wire at a distance d = 20 cm from the point of bending will be (Let $\mu_0 = 4\pi \times 10^{-7}$ H/m)

(see the figure above)

Question Number : 110 Question Id : 7512365070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A very long wire carrying a current $4\sqrt{2}$ A is bent at right angles. The magnitude of magnetic field $(|\vec{B}|)$ at a point 'P' lying on a line perpendicular to the bent wire at a distance d = 20 cm from the point of bending will be (Let $\mu_0 = 4\pi \times 10^{-7}$ H/m)

$4\sqrt{2}$ A విద్యుత్ ప్రవాహము కలిగిన ఒక అతి పొడవైన తీగను లంబకోణము ఆకృతిలో వంచారు. వంచిన తీగకు లంబంగా ఉన్న రేఖపై వంచబడిన బిందువు నుండి d = 20 cm ల దూరంలో ఉన్న బిందువు 'P' వద్ద గల అయస్కాంత క్షేత్ర పరిమాణము $(|\vec{B}|)$ విలువ ($\mu_0 = 4\pi \times 10^{-7}$ H/m గా తీసుకొనుము)



TS EAMCET 2019

Options :

1. 1 μT
2. 0.8 μT
3. 2 μT
4. 4 μT

(A) 1 μT
(B) 0.8 μT
(C) 2 μT
(D) 4 μT

Answer: (D) 4 μT · Official TGCHE final key

Q220 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A semi circular loop of radius 30 cm wire carries current 6 A. An uniform magnetic field 0.5 T is present perpendicular to the plane of the loop. What is the magnitude of force exerted on the wire.

(A) 0.9 N
(B) 1.8 N
(C) 0.8 N
(D) 1.4 N

Answer: (B) 1.8 N · Official TGCHE final key

Q221 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A dielectric circular disk of radius R carries a uniform surface charge density σ. If it rotates about its axis with angular velocity ω, the magnetic field at the centre of disk is :

(A) $\frac{\mu_0\sigma\omega R^2}{2\pi}$
(B) $\frac{\mu_0\sigma\omega R}{2}$
(C) $\frac{\mu_0\sigma\omega\pi R^2}{4}$
(D) $\frac{\mu_0\sigma\omega R}{2\sqrt{2}}$

Answer: (B) $\frac{\mu_0\sigma\omega R}{2}$ · Official TGCHE final key

Q222 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A magnetic field of 5×10^{-5} T is produced at a perpendicular distance of 0.2 m from a long straight wire carrying electric current. If the permeability of free space is $4\pi \times 10^{-7}$ T m/A, the current passing through the wire in A is

(A) 45
(B) 40
(C) 50
(D) 30

Answer: (C) 50 · Official TGCHE final key

Q223 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A long wire carries a current of 18 A kept along the axis of a long solenoid of radius 1 cm. The field due to the solenoid is 8×10^{-3} T. The magnitude of the resultant field at a point 0.6 mm from the solenoid axis is (Assume $\mu_0 = 4\pi \times 10^{-7}$ Tm/A)

(A) 6×10^{-3} T
(B) 6×10^{-4} T
(C) $2\sqrt{7} \times 10^{-3}$ T
(D) 10×10^{-3} T

Answer: (D) 10×10^{-3} T · Official TGCHE final key

Q224 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Two infinitely long straight wires A and B, each carrying current I are placed on x and y axis respectively. The current in wires A and B flow along $-\hat{i}$ and $\hat{j}$ directions respectively. The force on a charged particle having charge q moving from position $\vec{r} = d(\hat{i} + \hat{j})$ with velocity $\vec{v} = v\hat{i}$ is

(A) $\frac{\mu_0 Iqv}{2\pi d}\hat{j}$
(B) $\frac{\mu_0 Iqv}{\pi d}\hat{j}$
(C) $\frac{\mu_0 Iqv}{\sqrt{2}\pi d}\hat{k}$
(D) 0

Answer: (B) $\frac{\mu_0 Iqv}{\pi d}\hat{j}$ · Official TGCHE final key

Q225 TS EAMCET 2019 · 3 May · Shift 1 MCQ

A long straight wire carrying current 16 A is bent at 90° such that half of the wire lies along the positive x-axis and other half lies along the positive y-axis. What is the magnitude of magnetic field at the point $\vec{r} = (-2\hat{i} + 0\hat{j})$ mm. (Assume $\frac{\mu_0}{4\pi} = 10^{-7}\ \mathrm{H\,m^{-1}}$)

(A) 1.2 mT
(B) 0.8 mT
(C) 3.2 mT
(D) 1.6 mT

Answer: (B) 0.8 mT · Official TGCHE final key

Q226 TS EAMCET 2019 · 3 May · Shift 1 MCQ

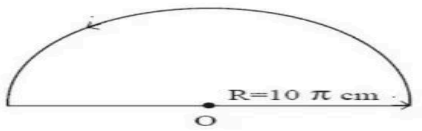
The magnitude of the force vector acting on a unit length of a thin wire carrying a current I = 8 A at a point O, if the wire is bent as shown in the figure with a radius R = 10 π cm, is

(see the figure above)

Question Number : 111 Question Id : 751236427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The magnitude of the force vector acting on a unit length of a thin wire carrying a curren I = 8 A at a point O, if the wire is bent as shown in the figure with a radius R = 10 π cm, is

తీగను పటంలో చూపినట్లుగా వ్యాసార్ధం R = 10 π cm లు ఉండేటట్లుగా దానిని వంచినపుడు, బిందువు O వద్ద విద్యుత్ప్రవాహం I = 8 A గల ఒక పలుచని తీగ యొక్క ప్రమాణ పొడవుపై చర్య జరిపే బల సదిశ యొక్క పరిమాణం విలువ



Options :

1. 64 μN/m
2. 32 μN/m
3. 20 μN/m
4. 100 μN/m

(A) 64 μN/m
(B) 32 μN/m
(C) 20 μN/m
(D) 100 μN/m

Answer: (A) 64 μN/m · Official TGCHE final key

Q227 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A proton accelerated by a potential difference $500\ \mathrm{kV}$ flies through a uniform transverse magnetic field $0.1\ \mathrm{T}$. The field is spread on a region of $1.0\ \mathrm{cm}$ thickness. The angle through which the proton gets deviated from its original direction is
(Proton mass $= 1.6 \times 10^{-27}\ \mathrm{kg}$ and charge of proton $= 1.6 \times 10^{-19}\ \mathrm{C}$)

(A) $0.01\ \mathrm{rad}$
(B) $0.1\ \mathrm{rad}$
(C) $0.05\ \mathrm{rad}$
(D) $0.08\ \mathrm{rad}$

Answer: (A) $0.01\ \mathrm{rad}$ · Official TGCHE final key

Q228 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A toroid has an iron core with internal magnetic field of $10\,\pi\ \mathrm{mT}$, when the current in the winding of 1500 turns per meter is $10\ \mathrm{A}$. Determine the field due to magnetization ($\mu_0 = 4\pi \times 10^{-7}\ \mathrm{Hm}^{-1}$)

(A) $(4\pi)\ \mathrm{mT}$
(B) $(10\pi)\ \mathrm{mT}$
(C) $\left(\frac{8}{\pi}\right)\ \mathrm{mT}$
(D) $\left(\frac{\pi}{4}\right)\ \mathrm{mT}$

Answer: (A) $(4\pi)\ \mathrm{mT}$ · Official TGCHE final key

Q229 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

Magnetic field at the centre of a circular loop of area 'A' is 'B'. Then the magnetic moment of the loop is
(μ_0 - permeability of free space)

(A) $\frac{BA^2}{\mu_0\pi}$
(B) $\frac{BA\sqrt{A}}{\mu_0}$
(C) $\frac{BA\sqrt{A}}{\mu_0\pi}$
(D) $\frac{2BA\sqrt{A}}{\mu_0\sqrt{\pi}}$

Answer: (D) $\frac{2BA\sqrt{A}}{\mu_0\sqrt{\pi}}$ · Official APSCHE final key

EdLoop EAPCET

Q230 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

A circular coil of radius $10\ \text{cm}$ with 100 turns carrying a current of $0.5\ \text{A}$ lies in a magnetic field of $2\ \text{T}$ such that the normal drawn to the plane of the coil makes an angle 'θ' with the direction of the field. Work done in rotating the coil to change the angle 'θ' from 0° to 180° is

(A) $\pi\ \text{J}$
(B) $2\pi\ \text{J}$
(C) $4\pi\ \text{J}$
(D) $8\pi\ \text{J}$

Answer: (B) $2\pi\ \text{J}$ · Official APSCHE final key

Q231 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

The magnetic field normal to the plane of a coil of 'N' turns and radius 'r' which carries a current 'i' is measured on the axis of the coil at a distance 'h' from the centre of the coil. This is smaller than the field at the centre by the fraction

(A) $\frac{3h^2}{2r^2}$
(B) $\frac{2h^2}{3r^2}$
(C) $\frac{3r^2}{2h^2}$
(D) $\frac{2r^2}{3h^3}$

Answer: (A) $\frac{3h^2}{2r^2}$ · Official APSCHE final key

Q232 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

A small block of mass 20 g and charge 4 mC is released on a long smooth inclined plane of inclination 45°. A uniform horizontal magnetic field of 1 T is acting parallel to the surface, as shown in the figure. The time from the start when the block loses contact with the surface of the plane is

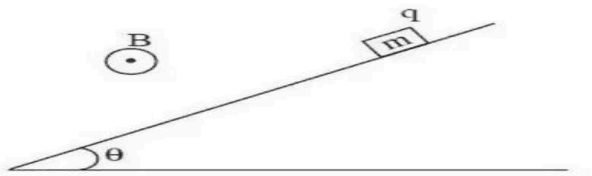
(see the figure above)

EdLoop EAPCET

Question Number : 111 Question Id : 1874634431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A small block of mass 20 g and charge 4 mC is released on a long smooth inclined plane of inclination 45°. A uniform horizontal magnetic field of 1 T is acting parallel to the surface, as shown in the figure. The time from the start when the block loses contact with the surface of the plane is

45° వాలుకోణం గల ఒక పొడవైన నున్నటి వాలుతలం మీద నుండి 20 g ద్రవ్యరాశి మరియు 4 mC ఆవేశం గల ఒక చిన్న దిమ్మ వదలబడింది. పటంలో చూపిన విధంగా, వాలు తలానికి సమాంతరంగా 1 T ఏకరీతి క్షితిజసమాంతర అయస్కాంత క్షేత్రం పని చేయుచున్నది. దిమ్మ వదలబడినప్పటినుండి అది తలంతో స్పర్శ కోల్పోవుటకు పట్టు కాలం



Options :
1. 2 s
2. 3 s
3. 5 s
4. 6 s

(A) 2 s
(B) 3 s
(C) 5 s
(D) 6 s

Answer: (C) 5 s · Official APSCHE final key

Q233 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A wire of length $44\ \text{cm}$ carrying a current of $2\ \text{A}$ is bent and the two ends are joined. This shape is placed in a uniform magnetic field of $50\ \text{mT}$. If the magnetic field is in north-south direction, then the maximum torque acting on the shape is

(A) $1.54 \times 10^{-3}\ \text{Nm}$
(B) $0.77 \times 10^{-3}\ \text{Nm}$
(C) $3.08 \times 10^{-3}\ \text{Nm}$
(D) Zero

Answer: (A) $1.54 \times 10^{-3}\ \text{Nm}$ · Official APSCHE final key

Q234 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A toroid has a non-ferromagnetic core of inner radius $20.5\ \text{cm}$ and outer radius $21.5\ \text{cm}$, around which 4200 turns of a wire are wound. If the current in the wire is $10\ \text{A}$, the magnetic field inside the core of the toroid is ($\mu_0 = 4\pi \times 10^{-7}\ \text{Hm}^{-1}$)

(A) $20\ \mathrm{mT}$
(B) $40\ \mathrm{mT}$
(C) $20\pi\ \mathrm{mT}$
(D) $40\pi\ \mathrm{mT}$

Answer: (B) $40\ \mathrm{mT}$ · Official APSCHE final key

Q235 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

A proton and an α-particle are simultaneously projected in the same direction into a region of uniform magnetic field of 2 mT perpendicular to the direction of the field. After some time it is found that the velocity of proton has changed in direction by 90°. Then at this time, the angle between the velocity vectors of proton and α-particle is

(A) 60°
(B) 90°
(C) 45°
(D) 180°

Answer: (C) 45° · Official APSCHE final key

Q236 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

Magnetic moment due to the motion of the electron in n^{th} energy state of hydrogen atom is proportional to _____

(A) n^{-2}
(B) n
(C) n^2
(D) n^3

Answer: (B) n · Official APSCHE final key

Q237 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

A circular coil connected to a battery of emf E produced a certain magnetic induction field at its centre. The coil is unwound, stretched to double its length rewound into a coil of $\frac{1}{3}^{\text{rd}}$ of the original radius and connected to a battery of emf E' to produce same field at the centre. Then E' is

(A) $\frac{2E}{9}$
(B) $\frac{3E}{7}$
(C) $\frac{9E}{4}$
(D) $\frac{E}{6}$

Answer: (A) $\frac{2E}{9}$ · Official APSCHE final key

Q238 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

Assertion (A): When a proton and a neutron enter into a transverse magnetic field with equal speeds, then they trace circular paths of equal radii.
Reason (R): In a transverse magnetic field, the period of revolution of a charged particle in a circular path is directly proportional to the mass of the partice (sic).

(A) Both (A) and (R) are correct and (R) is the correct explanation of (A)
(B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
(C) (A) is correct but (R) is not correct
(D) (A) is not correct but (R) is correct

Answer: (D) (A) is not correct but (R) is correct · Official APSCHE final key

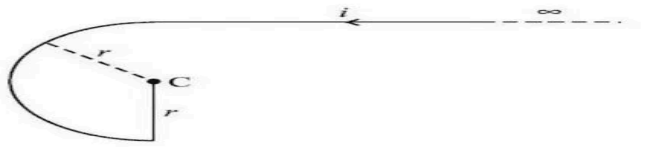
Q239 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The magnetic field at the centre C of the arrangement shown in figure is
(see the figure above)

Question Number : 112 Question Id : 1874633792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The magnetic field at the centre C of the arrangement shown in figure is

పటంలో చూపబడినట్లు ఉన్న అమరికలో కేంద్రం C వద్ద అయస్కాంత క్షేత్రం



Options :
1. $\frac{\mu_0 i}{2\pi r}(1+\pi)$
2. $\frac{\mu_0 i}{4\pi r}(1+\pi)$
3. $\frac{\mu_0 i}{\pi r}(1+\pi)$
4. $\frac{\mu_0 i}{r}(1+\pi)$

(A) $\frac{\mu_0 i}{2\pi r}(1+\pi)$
(B) $\frac{\mu_0 i}{4\pi r}(1+\pi)$
(C) $\frac{\mu_0 i}{\pi r}(1+\pi)$
(D) $\frac{\mu_0 i}{r}(1+\pi)$

Answer: (B) $\frac{\mu_0 i}{4\pi r}(1+\pi)$ · Official APSCHE final key

Q240 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

An electron accelerated through a potential difference 'V', passes through a uniform transverse magnetic field and experiences a force 'F'. If the accelerating potential is increased to '2V', the electron in the same magnetic field will experience a force

(A) F
(B) $\frac{\mathrm{F}}{2}$
(C) $\sqrt{2}\,\mathrm{F}$
(D) $2\mathrm{F}$

Answer: (C) $\sqrt{2}\,\mathrm{F}$ · Official APSCHE final key

Q241 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A coil in the shape of an equilateral triangle of side 2 cm is suspended from a vertex such that it hangs in a vertical plane between the poles of a permanent magnet producing a horizontal magnetic field of 100×10^{-3} tesla. The magnetic field is parallel to the plane of the coil. For the moment of couple acting on the coil to be $2\sqrt{3} \times 10^{-5}\ \mathrm{Nm}$, the current to be passed through the coil is

(A) $0.5\ \mathrm{A}$
(B) $1\ \mathrm{A}$
(C) $2\ \mathrm{A}$
(D) $4\ \mathrm{A}$

Answer: (C) $2\ \mathrm{A}$ · Official APSCHE final key

Q242 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A square loop of length L is placed with its edges parallel to the X-Y axes. The loop is carrying the current I. If the magnetic field in the region varies as $\vec{B} = B_0\left(1 + \frac{xy}{L^2}\right)\hat{k}$, then magnitude of the force on the loop will be :

(A) $\mathrm{IB_0L}$
(B) $\frac{\mathrm{IB_0L}}{2}$
(C) $\frac{\mathrm{IB_0L}}{\sqrt{2}}$
(D) $\sqrt{2}\,\mathrm{IB_0L}$

Answer: (C) $\frac{\mathrm{IB_0L}}{\sqrt{2}}$ · The council's preliminary key

Q243 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A non conducting disc of radius R has surface charge density which varies with distance from the centre as $\sigma(r) = \sigma_0\left[1 + \sqrt{\frac{r}{R}}\right]$ where σ_0 is a constant. The disc rotates about its axis with angular velocity ω. If B is the magnitude of magnetic induction at the centre then $\frac{B}{\mu_0\sigma_0\omega R}$ will be

(A) $\frac{3}{4}$
(B) $\frac{4}{5}$
(C) $\frac{5}{6}$
(D) $\frac{6}{7}$

Answer: (C) $\frac{5}{6}$ · The council's preliminary key

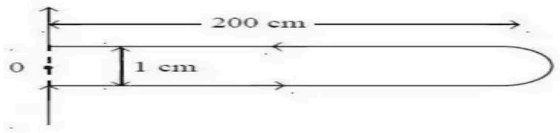
Q244 TS EAMCET 2018 · 7 May · Shift 1 MCQ

For a wire, as shown in the figure, carrying a current of 10 A, the magnetic induction field at the point '0' is : [Use $\mu_0 = 4\pi \times 10^{-7}$ H/m] *(see the figure above)*

Question Number : 111 Question Id : 4928632671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

For a wire, as shown in the figure, carrying a current of 10 A, the magnetic induction field at the point '0' is : [Use $\mu_0 = 4\pi \times 10^{-7}$ H/m]

పటంలో చూపిన విధంగా తీగగుండా 10 A విద్యుత్‌ప్రవాహము ప్రవహిస్తుంది. '0' బిందువు వద్ద అయస్కాంత ప్రేరణ క్షేత్రం విలువ ($\mu_0 = 4\pi \times 10^{-7}$ H/m గా వాడుము)



Options :
1. 2×10^{-4} T
2. 4×10^{-4} T
3. 10×10^{-4} T
4. $4\pi \times 10^{-4}$ T

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

Answer: (B) 4×10^{-4} T · The council's preliminary key

Q245 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A steady current I flows through a wire with one end at O and the other end extending upto infinity as shown in the figure. The magnetic field at a point P, located at a distance 'd' from O is

(A) $\frac{\mu_o I}{4\pi d\cos\alpha}(1-\sin\alpha)$
(B) $\frac{\mu_o I}{2\pi d\cos\alpha}(1-\sin\alpha)$
(C) $\frac{\mu_o I}{4\pi d}$
(D) $\frac{\mu_o I}{4\pi d\sin\alpha}(1-\cos\alpha)$

Answer: (D) $\frac{\mu_o I}{4\pi d\sin\alpha}(1-\cos\alpha)$ · The council's preliminary key

Q246 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The magnetic induction at point 'O' of the given infinitely long current carrying wire shown in the figure below is

(A) $\frac{\mu_o I}{4\pi R}\left(1-\frac{3\pi}{2}\right)$
(B) $\frac{\mu_o I}{2R(1+\pi)}$
(C) $\frac{\mu_o I}{4\pi R}\left[1+\frac{3\pi}{2}\right]$
(D) $\frac{\mu_o I}{4\pi R}$

Answer: (C) $\frac{\mu_o I}{4\pi R}\left[1+\frac{3\pi}{2}\right]$ · The council's preliminary key

Q247 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Consider a current carrying wire shown in the figure. If the radius of the curved part of the wire is R and the linear parts are assumed to be very long, the magnetic induction of the field at the point 'O' is

(see the figure above)

EdLoop EAPCET

Question Number : 109 Question Id : 49286323449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Consider a current carrying wire shown in the figure. If the radius of the curved part of the wire is R and the linear parts are assumed to be very long, the magnetic induction of the field at the point 'O' is

పటంలో చూపిన విధంగా విద్యుత్ ప్రవాహాన్ని కలిగియున్న ఒక తీగను గమనించుము. తీగ వక్రభాగపు వ్యాసార్ధము R మరియు తీతియు భాగాలు చాలా పొడవైనవి అనుకొంటే, 'O' బిందువు వద్ద గల క్షేత్రపు అయస్కాంతప్రేరకత్వము



Options :
1. $\frac{\mu_0}{4\pi}\frac{i}{R}(2+\pi)$
2. $\frac{\mu_0 i}{2\pi R}$
3. $\frac{\mu_0}{2}\frac{i}{R}$
4. $\frac{\mu_0}{4}\frac{i}{R}$

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

Answer: (A) $\frac{\mu_0}{4\pi}\frac{i}{R}(2+\pi)$ · The council's preliminary key

Q248 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A charged particle moves with some initial velocity along the direction of external magnetic field B. Now if we apply uniform electric field perpendicular to the magnetic field, the trajectory of the charged particle will be

(A) circle
(B) helix
(C) cycloid
(D) straight line

Options (2) or (3) were accepted. More than one answer was accepted. · The council's preliminary key

Q249 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Two circular loops L_1 and L_2 of wire carrying equal and opposite currents are placed parallel to each other with a common axis. The radius of loop L_1 is R_1 and that of L_2 is R_2. The distance between the centres of the loops is $\sqrt{3}R_1$. The magnetic field at the centre of L_2 shall be zero if

(A) $R_2 = 4R_1$
(B) $R_2 = 2R_1$
(C) $R_2 = \sqrt{2}R_1$
(D) $R_2 = 8R_1$

Answer: (D) $R_2 = 8R_1$ · The council's preliminary key

Q250 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A non-conducting thin disc of radius R rotates about its axis with an angular velocity w. The surface charge density on the disc varies with the distance r from the center as $\sigma(r) = \sigma_0 \left[1 + \left(\frac{r}{R}\right)^{\beta}\right]$, where σ_0 and β are constants. If the magnetic induction at the center is $B = \left(\frac{9}{10}\right) \mu_0 \sigma_0 w R$, the value of β is

(A) $\frac{1}{4}$
(B) 4
(C) $\frac{1}{2}$
(D) 2

Answer: (A) $\frac{1}{4}$ · The council's preliminary key

Q251 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A moving coil galvanometer has a rectangular wire coil of enclosed area $0.001\ \mathrm{m}^2$ and 500 turns. The coil operates in a radial magnetic field of 0.2 T and carries a current of $6\pi \times 10^{-8}$ A. If the torsional spring constant is 6×10^{-7} N.m/rad , the angular deflection of the coil in radians is

(A) $\frac{\pi}{100}$
(B) $\frac{\pi}{200}$
(C) $\frac{\pi}{300}$
(D) $\frac{\pi}{400}$

Answer: (A) $\frac{\pi}{100}$ · The council's preliminary key

Q252 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A charge q enters a region having electric field $\vec{E}$ and magnetic field $\vec{B}$ with velocity $\vec{v}$. If it continues to move with the same velocity then which of the following statements is not true

(A) $\vec{E} \cdot \vec{B} = 0$
(B) $\vec{E} \cdot \vec{v} = 0$
(C) If $\vec{v} \cdot \vec{B} = 0$ then $\vec{v} = \frac{\vec{E} \times \vec{B}}{\vec{B} \cdot \vec{B}}$
(D) $\vec{v} \times \vec{E} = \vec{B}$

Answer: (D) $\vec{v} \times \vec{E} = \vec{B}$ · The council's preliminary key

EdLoop EAPCET

Q253 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

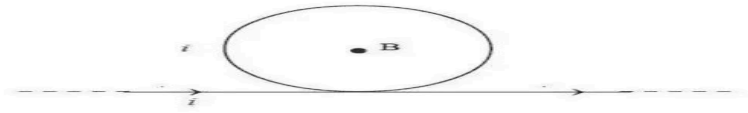
A circular loop and an infinitely long straight conductor carry equal currents, as shown in the figure. The net magnetic field at the centre of the loop is B_1 when the current in the loop is clock-wise and B_2 when the current in the loop is anti clock-wise. Then $\frac{B_1}{B_2}$ is

(see the figure above)

Question Number : 110 Question Id : 4557344430 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A circular loop and an infinitely long straight conductor carry equal currents, as shown in the figure. The net magnetic field at the centre of the loop is B_1 when the current in the loop is clock-wise and B_2 when the current in the loop is anti clock-wise. Then $\frac{B_1}{B_2}$ is

పటంలో చూపిన విధంగా, ఒక వృత్తాకార లూప్ మరియు అనంతమైన పొడవు గల ఒక తీగపై సమానమైన విద్యుత్ ప్రవాహాలను కలిగి ఉన్నాయి. లూప్ లో ప్రవాహం సవ్యదిశలో ఉన్నప్పుడు లూప్ కేంద్రం వద్ద గల నికర అయస్కాంత క్షేత్రం B_1 మరియు ప్రవాహం అపసవ్య దిశలో ఉన్నప్పుడు B_2 అయితే, $\frac{B_1}{B_2}$ =



Options :
1. $\frac{15}{19}$
2. $\frac{13}{15}$
3. $\frac{13}{17}$
4. $\frac{17}{19}$

(A) $\frac{15}{29}$
(B) $\frac{13}{15}$
(C) $\frac{13}{17}$
(D) $\frac{17}{19}$

Answer: (A) $\frac{15}{29}$ · The council's preliminary key

Q254 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

A thin wire of length 'L' made of an insulating material is bent to form a circular loop and a positive charge 'q' is given so that it is distributed uniformly around the circumference of the loop. The loop is then rotated with an angular speed 'ω' about an axis passing through its centre. If a uniform magnetic field B directed parallel to the plane of the loop is applied then the magnitude of the magnetic torque on the loop is

(A) $\frac{q\omega L^2 B}{8\pi^2}$
(B) $\frac{q\omega L^2 B}{4\pi^2}$
(C) $\frac{q\omega L^2 B}{2\pi^2}$
(D) $\frac{q\omega L^2 B}{\pi^2}$

Answer: (A) $\frac{q\omega L^2 B}{8\pi^2}$ · The council's preliminary key

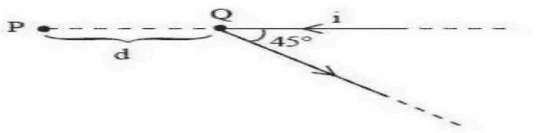
Q255 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A long straight wire carrying electric current 'i' is bent at its mid point to form an angle of 45° as shown in the figure. Magnetic field at a point P at a distance d from the point Q of bending is _____
(see the figure above)

Question Number : 110 Question Id : 4557344110 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A long straight wire carrying electric current 'i' is bent at its mid point to form an angle of 45° as shown in the figure. Magnetic field at a point P at a distance d from the point Q of bending is _____

విద్యుత్ ప్రవాహం 'i' గల ఒక పొడవైన తీగను పటంలో చూపిన విధంగా 45° కోణం చేయునట్లు దాని మధ్య బిందువు వద్ద వంచారు. వంచబడిన బిందువు Q నుండి d దూరంలో గల బిందువు P వద్ద అయస్కాంత క్షేత్రం _____



Options :
1. $\frac{\mu_0 i}{4\pi d}\left[\sqrt{2}-1\right]$
2. $\frac{\mu_0 i}{2\pi d}\left[\sqrt{2}-1\right]$
3. $\frac{\mu_0 i}{4\pi d}$
4. $\frac{\mu_0 i}{2\pi d}$

(A) $\frac{\mu_0 i}{4\pi d}\left[\sqrt{2}-1\right]$
(B) $\frac{\mu_0 i}{2\pi d}\left[\sqrt{2}-1\right]$
(C) $\frac{\mu_0 i}{4\pi d}$
(D) $\frac{\mu_0 i}{2\pi d}$

Answer: (A) $\frac{\mu_0 i}{4\pi d}\left[\sqrt{2}-1\right]$ · The council's preliminary key

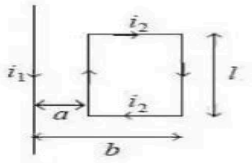
Q256 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A current carrying square loop is placed near a straight infinitely long current carrying wire as shown in figure. The torque acting on the loop is
(see the figure above)

Question Number : 111 Question Id : 4557344111 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A current carrying square loop is placed near a straight infinitely long current carrying wire as shown in figure. The torque acting on the loop is

విద్యుత్ ప్రవహించుచున్న చతురస్రాకార తీగ ఉచ్చును తిన్నని అనంత పొడవుగల వాహకమునకు దగ్గరగా పటములో చూపిన విధముగా అమర్చిబడినది. ఉచ్చుపై పనిచేయు టార్క్



Options :

1. $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l}{ab}$
2. $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l}{a(a+b)}$
3. $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l(b-a)}{a\,b}$
4. 0

(A) $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l}{ab}$
(B) $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l}{a(a+b)}$
(C) $\frac{\mu_0}{2\pi}\frac{i_1 i_2 l(b-a)}{ab}$
(D) 0

Answer: (D) 0 · The council's preliminary key

Q257 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

Two long straight parallel conductors are carrying currents i_1 and i_2 in the same direction. Work done per unit length when the distance between them is doubled is

(A) $2 \times \frac{\mu_0}{2\pi} i_1 i_2$
(B) $\frac{\mu_0}{2\pi} i_1 i_2 \ln[2]$
(C) $\frac{\mu_0}{2\pi} i_1 i_2 \ln[4]$
(D) 0

Answer: (B) $\frac{\mu_0}{2\pi} i_1 i_2 \ln[2]$ · The council's preliminary key

Q258 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A straight conductor of length 32 cm carries a current of 30 A. Magnetic induction at a point in air at a perpendicular distance of 12 cm from the midpoint of the conductor is _____

(A) 0.2 gauss
(B) 0.3 gauss
(C) 0.4 gauss
(D) 0.5 gauss

Answer: (C) 0.4 gauss · The council's preliminary key

Q259 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Two infinitely long wires carry currents $4\ \mathrm{A}$ and $3\ \mathrm{A}$ placed along X-axis and Y-axis respectively. Magnetic field at a point P(0, 0, d) m will be _____ T.

(A) $\frac{4\mu_0}{2\pi d}$
(B) $\frac{3\mu_0}{2\pi d}$
(C) $\frac{7\mu_0}{2\pi d}$
(D) $\frac{5\mu_0}{2\pi d}$

Answer: (D) $\frac{5\mu_0}{2\pi d}$ · The council's preliminary key

Q260 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Two moving coil galvanometers, X and Y have coils with resistances $10\ \Omega$ and $14\ \Omega$, cross-sectional areas $4.8 \times 10^{-3}\ \mathrm{m}^2$ and $2.4 \times 10^{-3}\ \mathrm{m}^2$, number of turns 30 and 45 respectively. They are placed in magnetic fields of $0.25\ \mathrm{T}$ and $0.50\ \mathrm{T}$ respectively. Then the ratio of their current sensitivities and the ratio of their voltage sensitivities are respectively.

(A) $2:3\ ;\ 14:15$
(B) $5:7\ ;\ 2:1$
(C) $2:13\ ;\ 1:2$
(D) $14:15\ ;\ 2:9$

Answer: (A) $2:3\ ;\ 14:15$ · The council's preliminary key

Q261 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A beam of protons enters a uniform magnetic field of 0.314 T with a velocity $4 \times 10^5\ \mathrm{ms}^{-1}$ in a direction making an angle 60° with the direction of the magnetic field. The path of the beam is (mass of proton $= 1.6 \times 10^{-27}\ \mathrm{kg}$)

(A) a circle of radius 0.2 m
(B) a straight line
(C) a helix with a pitch 4 cm
(D) a helix with a pitch 4 mm

Answer: (C) a helix with a pitch 4 cm · The council's preliminary key

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Q262 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The magnetic field due to a current carrying loop of radius 3 cm at a point on its axis at a distance of 4 cm from its centre is $54\ \mu\mathrm{T}$. Then the value of the magnetic field at the centre of the loop is _____

(A) $250\ \mu\mathrm{T}$
(B) $150\ \mu\mathrm{T}$
(C) $75\ \mu\mathrm{T}$
(D) $125\ \mu\mathrm{T}$

Answer: (A) $250\ \mu\mathrm{T}$ · The council's preliminary key

Q263 TS EAMCET 2017 · 12 May · Offline MCQ

A current carrying wire in its neighbourhood produces

(A) electric field
(B) electric and magnetic fields
(C) magnetic field
(D) no field

Answer: (C) magnetic field · Checked by our team

Q264 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Two concentric coils of 20 turns each are placed in same plane. Their radii are 30 cm and 60 cm and carry 0.4 A and 0.6 A currents respectively in opposite directions. The magnetic induction at the centre in tesla is _____

(A) $\frac{5}{3}\mu_0$
(B) $\frac{8}{3}\mu_0$
(C) $\frac{2}{3}\mu_0$
(D) $\frac{10}{3}\mu_0$

Answer: (D) $\frac{10}{3}\mu_0$ · The council's preliminary key

Q265 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Two long parallel conducting wires carrying currents are seperated by a distance 'x'. Work done per unit length in changing the distance between the wires is proportional to

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(A) x
(B) $\frac{1}{x}$
(C) $\log_e x$
(D) $\frac{1}{\log_e x}$

Answer: (C) $\log_e x$ · The council's preliminary key

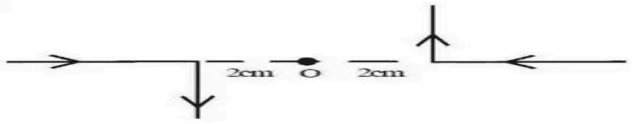
Q266 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

Two infinite long wires each carrying a current 10 A are bend to form a right angle as shown in the figure. Then the magnetic induction at 'O' is $\left[\mu_0 = 4\pi \times 10^{-7}\ \mathrm{Hm}^{-1}\right]$
(see the figure above)

Question Number : 110 Question Id : 1017174750 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two infinite long wires each carrying a current 10 A are bend to form a right angle as shov in the figure. Then the magnetic induction at 'O' is $\left[\mu_0 = 4\pi \times 10^{-7}\ \mathrm{Hm}^{-1}\right]$

ఒక్కొక్కటి 10 A విద్యుత్ ప్రవాహాలను కలిగివున్న అనంత పొడవు గల రెండు తీగలను పటం చూపిన విధంగా లంబకోణం ఏర్పడునట్లు వంచినారు. అయితే 'O' వద్ద అయస్కాంత ప్రేర $\left[\mu_0 = 4\pi \times 10^{-7}\ \mathrm{Hm}^{-1}\right]$



Options :
1. 1×10^{-3} T
2. 1×10^{-4} T
3. 3×10^{-4} T
4. 0

(A) $1 \times 10^{-3}\ \mathrm{T}$
(B) $1 \times 10^{-4}\ \mathrm{T}$
(C) $3 \times 10^{-4}\ \mathrm{T}$
(D) 0

Answer: (B) $1 \times 10^{-4}\ \mathrm{T}$ · The council's preliminary key

Q267 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

An electron of mass 9×10^{-31} kg and charge 1.6×10^{-19} C moving with a velocity of $10^6\ \mathrm{ms}^{-1}$ entered a magnetic field normally and described a circle of radius 10 cm. Then the intensity of the magnetic field is

(A) 5.625×10^{-5} T
(B) 1.414×10^{-5} T
(C) 1.833×10^{-5} T
(D) 4.667×10^{-5} T

Answer: (A) 5.625×10^{-5} T · The council's preliminary key

Q268 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

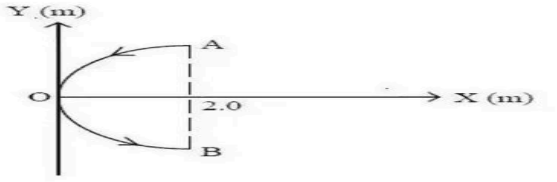
A conducting wire bent in the form of a parabola $y^2 = 2x$ carries a current of 4A as shown in figure. This wire is placed in a uniform magnetic field of induction $\vec{B} = +6\hat{k}$ T. The magnetic force on the wire is

(see the figure above)

Question Number : 111 Question Id : 1017174271 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A conducting wire bent in the form of a parabola $y^2 = 2x$ carries a current of 4A as show in figure. This wire is placed in a uniform magnetic field of induction $\vec{B} = +6\hat{k}$ T. Tl magnetic force on the wire is

4A విద్యుత్ ప్రవాహమున్న ఒక వాహక తీగ $y^2 = 2x$ పరావలయ ఆకారంలో పటంలో చూపినట్లు పంచబడినది. తీగను $\vec{B} = +6\hat{k}$ T ప్రేరణగల ఒక ఏకరీతి అయస్కాంత క్షేత్రంలో ఉంచిన. తీగ అయస్కాంత బలము



Options :
1. $96\hat{i}$ N
2. $-48\hat{i}$ N
3. $-96\hat{k}$ N
4. $-96\hat{i}$ N

(A) $96\hat{i}$ N
(B) $-48\hat{i}$ N
(C) $-96\hat{k}$ N
(D) $-96\hat{i}$ N

Answer: (D) $-96\hat{i}$ N · The council's preliminary key

Q269 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A circular coil of radius 9 cm carrying a current of 2 A is free to rotate about an axis in its plane perpendicular to an external magnetic field of $\pi \times 10^{-2}$ T. When the coil is turned slightly and released, it oscillates about its stable equilibrium with a time period of $\frac{1}{3}$ s. If the moment of inertia of the coil about its axis of rotation is 9×10^{-5} kgm^2, the number of turns of the coil is _____.

(A) 10
(B) 20
(C) 30
(D) 40

Answer: (B) 20 · The council's preliminary key

Q270 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The magnetic induction at the centre of a current carrying circular coil of radius 8 cm is $6\sqrt{6}$ times the magnetic induction at a point on its axis. Then the distance of the point from the centre of the coil in cm is $(\sqrt{5} = 2.236)$

(A) 17.89
(B) 1.789
(C) 178.9
(D) 0.1789

Answer: (A) 17.89 · The council's preliminary key

Q271 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

A beam of protons moving with a velocity $1.6 \times 10^5\ \mathrm{ms}^{-1}$ enter a uniform magnetic field $\frac{\pi}{10}\ \mathrm{T}$ at an angle 60° to the direction of the field. The pitch of the helical path of the protons is (mass of proton $= 1.6 \times 10^{-27}\ \mathrm{kg}$)

(A) $1.6 \times 10^{-2}\ \mathrm{m}$
(B) $2.6 \times 10^{-2}\ \mathrm{m}$
(C) $0.16 \times 10^{-2}\ \mathrm{m}$
(D) $0.016 \times 10^{-2}\ \mathrm{m}$

Answer: (A) $1.6 \times 10^{-2}\ \mathrm{m}$ · The council's preliminary key

Q272 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

Match the following:
List - 1
a) Flemings left hand rule
b) Flemings right hand rule
c) Clockwise current
d) Anticlockwise current
List - 2
e) direction of induced current
f) south pole
g) north pole

h) direction of force

The correct answer is

(A) a-h; b-e; c-f; d-g

(B) a-e; b-h; c-f; d-g

(C) a-g; b-e; c-f; d-h

(D) a-h; b-e; c-g; d-f

Answer: (A) a-h; b-e; c-f; d-g · The council's preliminary key

Q273 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

A magnetic field is applied on an electron moving with a velocity of $10^7\ \mathrm{ms}^{-1}$ at an angle of 30°. Then the time period of revolution of the electron in a circular path of radius 2 m is _____

(A) 5.5×10^{-6} s

(B) 7.0×10^{-7} s

(C) 2.5×10^{-6} s

(D) 3.5×10^{-7} s

Answer: (C) 2.5×10^{-6} s · The council's preliminary key

Q274 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

As shown in the figure, two infinitely long straight parallel wires P and Q carrying equal currents in opposite directions are arranged parallel to Y-axis. If the magnetic field due to wire P at the origin 'O' of the co-ordinate system is B, then match the resultant magnetic fields at various points given in column A with the points given in column B.

A) $\frac{B}{4}$

B) $\frac{B}{2}$

C) $\frac{2B}{3}$

D) $2B$

i) $(0, 0)$

ii) $(a, 0)$

iii) $(2a, 0)$

iv) $(3a, 0)$

(see the figure above)

The correct answer is

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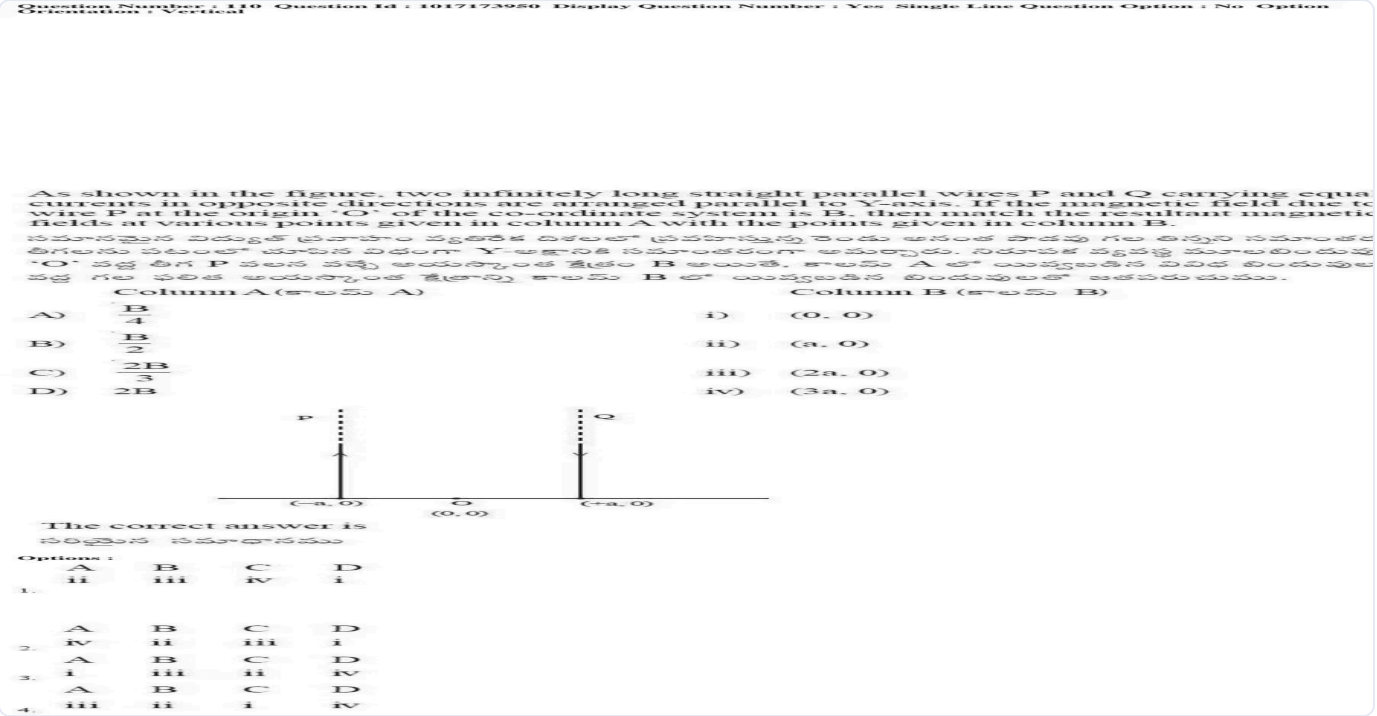

(A) A-ii, B-iii, C-iv, D-i

(B) A-iv, B-ii, C-iii, D-i

(C) A-i, B-iii, C-ii, D-iv

(D) A-iii, B-ii, C-i, D-iv

Answer: (B) A-iv, B-ii, C-iii, D-i · The council's preliminary key

Q275 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

If a charged particle moves in a gravity free space with uniform velocity, then which of the following is not possible ($\vec{E}$ = electric field, $\vec{B}$ = magnetic field)

(A) $\vec{E} = 0,\ \vec{B} = 0$

(B) $\vec{E} \neq 0,\ \vec{B} = 0$

(C) $\vec{E} = 0,\ \vec{B} \neq 0$

(D) $\vec{E} \neq 0,\ \vec{B} \neq 0$

Answer: (B) $\vec{E} \neq 0,\ \vec{B} = 0$ · The council's preliminary key

Q276 TS EAMCET 2016 · 15 May · Offline MCQ

A current of 1 A is flowing along the sides of an equilateral triangle of side 4.5×10^{-2} m. The magnetic field at the centroid of the triangle is ($\mu_0 = 4\pi \times 10^{-7}$ H/m)

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

Answer: (A) 4×10^{-5} T · Official TGCHE final key

Q277 TS EAMCET 2016 · 15 May · Offline MCQ

A charged particle (charge = q; mass = m) is rotating in a circle of radius 'R' with uniform speed 'V'. Ratio of its magnetic moment (μ) to the angular momentum (L) is

(A) $\frac{q}{2m}$
(B) $\frac{q}{m}$
(C) $\frac{q}{4m}$
(D) $\frac{2q}{m}$

Answer: (A) $\frac{q}{2m}$ · Official TGCHE final key

Q278 AP EAMCET 2016 · 29 Apr · Offline MCQ

A loop of flexible conducting wire lies in a magnetic field of 2.0 T with its plane perpendicular to the field. The length of the wire is 1 m. When a current of 1.1 A is passed through the loop, it opens into a circle, then the tension developed in the wire is

(A) 0.15 N
(B) 0.25 N
(C) 0.35 N
(D) 0.45 N

Answer: (C) 0.35 N · The council's preliminary key

Q279 AP EAMCET 2016 · 29 Apr · Offline MCQ

A charge q is spread uniformly over an isolated ring of radius 'R'. The ring is rotated about its natural axis with an angular velocity 'ω'. Magnetic dipole moment of the ring is

(A) $\frac{q\omega R^2}{2}$
(B) $\frac{q\omega R}{2}$
(C) $q\omega R^2$
(D) $\frac{q\omega}{2R}$

Answer: (A) $\frac{q\omega R^2}{2}$ · The council's preliminary key

Q280 AP EAMCET 2014 · 22 May · Offline MCQ

A steady current flows in a long wire. It is bent into a circular loop of one turn and the magnetic field at the centre of the coil is B. If the same wire is bent into a circular loop of n turns, the magnetic field at the centre of the coil is

(A) B/n
(B) nB
(C) nB^2
(D) n^2B

Answer: (D) n^2B · The council's preliminary key

Q281 AP EAMCET 2014 · 22 May · Offline MCQ

An electrically charged particle enters into a uniform magnetic induction field in a direction perpendicular to the field with a velocity V. Then, it travels

(A) in a straight line without acceleration
(B) with force in the direction of the field
(C) in a circular path with a radius directly proportional to V^2
(D) in a circular path with a radius directly proportional to its velocity

Answer: (D) in a circular path with a radius directly proportional to its velocity · The council's preliminary key

Q282 AP EAMCET 2012 · 12 May · Offline MCQ

A long curved conductor carries a current $\overline{I}$ ($\overline{I}$ is a vector). A small current element of length $\overline{d\ell}$, on the wire induces a magnetic field at a point, away from the current element. If the position vector between the current element and the point is $\overline{r}$, making an angle with current element then, the induced magnetic field density; $\overline{dB}$ (vector) at the point is (μ_0 = permeability of free space)

(A) $\frac{\mu_0 I\,\overline{d\ell}\times\overline{r}}{4\pi r}$ perpendicular to the current element $\overline{d\ell}$
(B) $\frac{\mu_0\overline{I}\times\overline{r}\times\overline{d\ell}}{4\pi r^2}$ perpendicular to the current element $\overline{d\ell}$
(C) $\frac{\mu_0\overline{I}\times\overline{d\ell}}{r}$ perpendicular to the plane containing the current element and position vector $\overline{r}$
(D) $\frac{\mu_0\overline{I}\times\overline{d\ell}}{4\pi r^2}$ perpendicular to the plane containing current element and position vector $\overline{r}$

Answer: (D) $\frac{\mu_0\overline{I}\times\overline{d\ell}}{4\pi r^2}$ **perpendicular to the plane containing current element and position vector** $\overline{r}$ · Checked by our team

Q283 AP EAMCET 2011 · 8 May · Offline MCQ

Match the following and find the *correct* pairs :
List I
a) Fleming's left hand rule
b) Right hand thumb rule
c) Biot-Savart law

d) Fleming's right hand rule

List II

e) Direction of induced current

f) Magnitude and direction of magnetic induction

g) Direction of force due to magnetic induction

h) Direction of magnetic lines due to current

(A) (a)-(g), (b)-(e), (c)-(f), (d)-(h)

(B) (a)-(g), (b)-(h), (c)-(f), (d)-(e)

(C) (a)-(f), (b)-(h), (c)-(g), (d)-(e)

(D) (a)-(h), (b)-(g), (c)-(e), (d)-(f)

Answer: (B) (a)-(g), (b)-(h), (c)-(f), (d)-(e) · The council's preliminary key

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Q284 AP EAMCET 2010 · 30 May · Offline MCQ

The intensity of the magnetic induction field at the center of a single turn circular coil of radius 5 cm carrying current of 0.9 A :

(A) $36\pi \times 10^{-7}$ T

(B) $9\pi \times 10^{-7}$ T

(C) $36\pi \times 10^{-6}$ T

(D) $9\pi \times 10^{-6}$ T

Answer: (A) $36\pi \times 10^{-7}$ T · Official APSCHE final key

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Q285 AP EAMCET 2010 · 30 May · Offline MCQ

In Thomson's experiment to determine $\frac{e}{m}$ of an electron, it is found that an electron beam having a kinetic energy of 45.5 eV remains undeflected, when subjected to crossed electric and magnetic fields. If $\mathrm{E} = 1 \times 10^{3}\ \mathrm{V\,m^{-1}}$, the value of 'B' is (mass of the electron is 9.1×10^{-31} kg) :

(A) $2.5 \times 10^{-3}\ \mathrm{Wb\,m^{-2}}$

(B) $5.0 \times 10^{-4}\ \mathrm{Wb\,m^{-2}}$

(C) $2.5 \times 10^{-4}\ \mathrm{Wb\,m^{-2}}$

(D) $1.0 \times 10^{-4}\ \mathrm{Wb\,m^{-2}}$

Answer: (C) $2.5 \times 10^{-4}\ \mathrm{Wb\,m^{-2}}$ · Official APSCHE final key

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