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PHYSICS · EAPCET (EAMCET)

Magnetism & Matter

Previous Year Questions with answers

135 questions · **126** papers · **2010–2026** · newest paper first

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What is in this PDF: every Magnetism & Matter 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.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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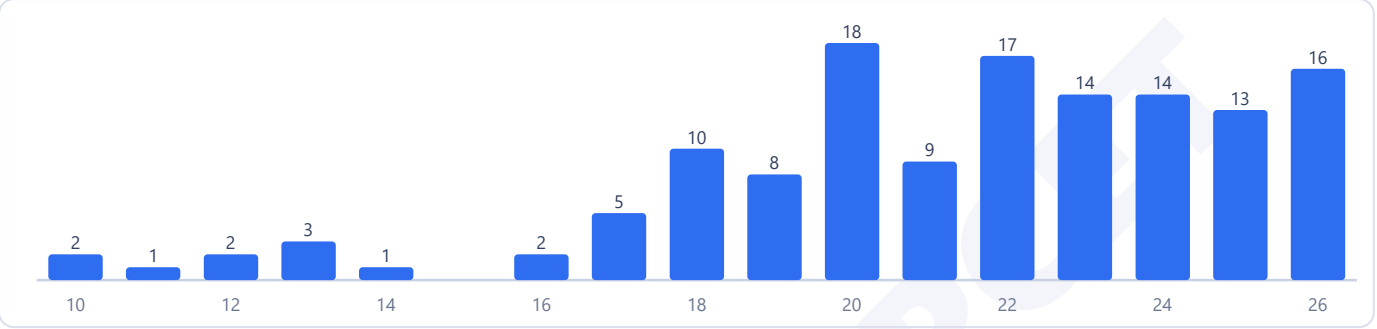
Chapter at a glance

2.4%	135	72 of 77	135 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 0.9 questions per paper in 2024–2026 against 1 in 2022–2023.

Questions per year



Counts are the questions we hold: 135 in 126 papers. 2 questions in this chapter came back in more than one paper.

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

Bar Magnet	75
Magnetic Materials	38
Earth's Magnetism	22

How often it comes up

Magnetism & Matter offers a concise, descriptive unit in Class 12 physics. Examining our records for AP and TS EAPCET papers between 2022 and 2026, the chapter contributed 74 questions across 77 papers. That corresponds to an average of 1.0 question per paper, making up 2.4% of all physics questions in that recent window. Looking back over all years in our archive from 2010 to 2026, Magnetism & Matter accounted for 135 questions across 149 papers, maintaining an average of 0.9 questions per paper and a 2.3% subject share. For early years between 2010 and 2021, our records document 61 questions in 72 papers, representing a 2.1% share. Over the last three exam years from 2024 to 2026, the chapter delivered 43 questions across 46 papers, holding a 2.3% share. Comparison across eras shows that the subject share from 2024 to 2026 is about the same when measured against the early 2010–2021 papers, and about the same when compared to the recent 2022–2026 five-year window.

State-level distributions demonstrate identical proportions between the two test agencies. Between 2022 and 2026, AP EAPCET papers in our set contributed 46 questions across 48 papers, with 44 papers carrying at least one question (1.0 per paper, 2.4% share). TS EAPCET contributed 28 questions across 29 papers in our set, with 28 papers featuring questions (1.0 per paper, 2.4% share). Magnetism & Matter has appeared every year since 2022, though across all 77 recent papers in our collection, five papers missed it, so it did not feature in all 77 sittings. The chapter ranks 26th of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2020, with 18 questions across 18 papers.

Most-asked topics

Questions group into three focused categories:

- **Bar Magnet**: This leading topic supplied 40 questions in the recent five-year period, contributing to 75 questions across all years in our archive. It tests axial and equatorial fields of magnetic dipoles, oscillations of a magnetic needle in a magnetometer, torque, and work done rotating a magnet.

- **Magnetic Materials**: Recent examinations produced 25 questions, out of 38 questions in the complete record. Key concepts cover diamagnetic, paramagnetic, and ferromagnetic classifications, Curie's law, magnetic susceptibility, relative permeability, and hysteresis loops.
- **Earth's Magnetism**: A pool of 9 questions appeared between 2022 and 2026, out of 22 questions across the entire archive. Topics examine magnetic elements of the earth: magnetic declination, magnetic inclination or angle of dip, and horizontal component of the geomagnetic field.

What the questions look like

Bar magnet dipole fields and needle oscillations form frequent numerical tasks. A standard question compares the axial field at distance d with the equatorial field at the same distance, relying on the two-to-one ratio for short magnets. Vibration magnetometer questions ask for the new oscillation period when a bar magnet is cut into two equal halves along its length or perpendicular to its length, which changes both its dipole moment M and moment of inertia I.

Questions on magnetic properties of matter test definitions and Curie's law. Students are frequently given the magnetic susceptibility of a paramagnetic salt at an initial absolute temperature and asked to compute its susceptibility at a higher temperature using the inverse temperature relationship $\chi \propto 1/T$. Earth's magnetism questions are direct arithmetic tests, giving total field strength and the horizontal field to determine the local angle of dip.

How to practise it

Start by mastering the magnetic dipole formulas for a short bar magnet of magnetic moment M. The axial field at distance d is B_axial = μ_zero (two M) / (four π d^3), while the equatorial field at the same distance is B_equatorial = μ_zero M / (four π d^3), exactly half the axial strength. The period of a magnetic dipole oscillating in uniform horizontal field B_H is T = two π √(I / M B_H). If cut along its axis into two symmetric halves, each half retains length L but halves pole strength, so both M and I halve, leaving oscillation period unchanged.

Next, study terrestrial magnetic components. The total geomagnetic field vector B_E resolves into horizontal component B_H = B_E cos δ and vertical component B_V = B_E sin δ, where δ is the magnetic dip angle. Consequently, tan δ = B_V / B_H. At the magnetic equator, dip δ = zero and B_V = zero. At the magnetic poles, dip δ = ninety degrees and B_H = zero.

Finally, master material relationships. Magnetisation M relates to magnetic intensity H through M = χ H. Total magnetic induction is B = μ_zero (H + M) = μ_zero (1 + χ) H = μ H. Relative permeability is $\mu_r = 1 + \chi$. Diamagnetic materials exhibit small negative susceptibility independent of temperature. Paramagnetic materials show small positive susceptibility obeying Curie's law $\chi = C / T$. Ferromagnetic materials exhibit large positive susceptibility and lose their permanent ordering above the Curie temperature.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A bulk magnetic material has volume of $2\ m^3$ and its magnetization is found to be $2\ A\,m^{-1}$, then the magnetic moment of the bulk material is

(A) $1\ Am^2$
(B) $4\ Am^2$
(C) $2\ Am^2$
(D) $8\ Am^2$

Answer: (B) $4\ Am^2$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

Two identical short bar magnets, each having a magnetic moment of 10 Am^2 are arranged such that their axial lines are perpendicular to each other and their centres be along the same straight line in a horizontal plane. If the distance between their centres is 0.2 m, the resultant magnetic induction at a point midway between them is ($\mu_0 = 4\pi \times 10^{-7}$ Hm^{-1})

(A) $\sqrt{2} \times 10^{-7}\ \mathrm{T}$
(B) $\sqrt{5} \times 10^{-7}\ \mathrm{T}$
(C) $\sqrt{2} \times 10^{-3}\ \mathrm{T}$
(D) $\sqrt{5} \times 10^{-3}\ \mathrm{T}$

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

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Two identical bar magnets are placed one above the other such that they are mutually perpendicular and bisect each other. The time period of this combination in a horizontal magnetic field is 'T'. The time period of each magnet in the same field is

(A) $\sqrt{2}T$
(B) $2^{(1/4)}T$
(C) $2^{-(1/3)}T$
(D) $2^{-(1/4)}T$

Answer: (D) $2^{-(1/4)}T$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The temperature at which the susceptibility of nickel becomes 0.5 times its susceptibility at a temperature of $460^\circ\mathrm{C}$ is (Curie temperature of nickel is $360^\circ\mathrm{C}$)

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(A) 560 K
(B) 833 K
(C) 733 K
(D) 760 K

Answer: (B) 833 K · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

A material satisfies the relation $\mu_0(\mathrm{H}+\mathrm{M})=0$, where H and M are magnetic intensity and magnetization, respectively; then the material is

(A) Nonmagnetic
(B) Paramagnetic
(C) Ferromagnetic
(D) Diamagnetic

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

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

At a given place the ratio of total magnetic field of earth to the horizontal component of earth is 2. Angle of dip at that place is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (C) 60° · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The earth's magnetic field at a certain place has a total strength of 0.5 Gauss and the horizontal component of 0.3 Gauss. Then the angle of dip at that place is

(A) $\tan^{-1}\frac{3}{4}$
(B) $\tan^{-1}\frac{4}{3}$
(C) $\sin^{-1}\frac{3}{4}$
(D) $\sin^{-1}\frac{3}{5}$

Answer: (B) $\tan^{-1}\frac{4}{3}$ · The council's preliminary key

Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A magnetic material placed in a magnetic field of intensity $H=1000\ Am^{-1}$ has magnetization $M=2\ Am^{-1}$. The magnetic susceptibility, and type of material is

(A) 2×10^{-3}, Diamagnetic
(B) 2×10^{-3}, paramagnetic
(C) 4×10^{-3}, Ferromagnetic
(D) 2000, Ferromagnetic

Answer: (B) 2×10^{-3}, **paramagnetic** · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

A Magnetic needle lying parallel to a magnetic field requires W units of work to turn it through 60°. The torque required to keep the needle in this position will be

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

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

Q10 AP EAPCET 2026 · 12 May · Shift 2 MCQ

If χ is the magnetic susceptibility, μ, μ_0 and μ_r are absolute, free space and relative permeabilities respectively, then

(A) $\mu = \mu_r(1+\chi)$
(B) $\mu = \mu_0(1+\chi)$
(C) $\mu_r = 1-\chi$
(D) $\mu = \frac{\mu_r}{\mu_0}(1-\chi)$

Answer: (B) $\mu = \mu_0(1+\chi)$ · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If the magnetic field at the equator of the earth is 0.4 G, then the earth's magnetic dipole moment (in $\mathrm{A\,m^2}$) is of the order of

(Radius of the Earth = 6400 km)

(A) 10^{18}
(B) 10^{17}
(C) 10^{26}
(D) 10^{23}

Answer: (D) 10^{23} · The council's preliminary key

Q12 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A bar magnet of magnetic moment $1.8\ \mathrm{Am}^2$ is free to rotate about a vertical axis passing through its centre at a place where the vertical component of earth's magnetic field is $0.3 \times 10^{-4}\ \mathrm{T}$ and the dip angle is 45°. If the magnet at rest in east-west direction is released, then the kinetic energy (in $\mu\mathrm{J}$) of the magnet when it reaches north-south direction is

(A) 72
(B) 54
(C) 27
(D) 36

Answer: (B) 54 · The council's preliminary key

Q13 TS EAPCET 2026 · 10 May · Shift 1 MCQ

A magnetic dipole is suspended in a region where two uniform magnetic fields are inclined at 75° with each other. In stable equilibrium, if the dipole makes an angle of 30° with the direction of one field of $10\sqrt{2}\,\mathrm{mT}$, then the value of the second magnetic field is

(A) $20\sqrt{2}\,\mathrm{mT}$
(B) $10\sqrt{2}\,\mathrm{mT}$
(C) $10\,\mathrm{mT}$
(D) $20\,\mathrm{mT}$

Answer: (C) $10\,\mathrm{mT}$ · The council's preliminary key

Q14 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The mean radius of a Rowland ring is 12 cm and it has 3000 turns of wire wound on its ferromagnetic core of relative permeability 500. If the magnetic field inside the core is 5 T, then the magnetizing current is

(A) 2 A
(B) 3 A
(C) 4 A
(D) 5 A

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

Q15 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If the susceptibility of a paramagnetic substance at a temperature of $23\ ^\circ\mathrm{C}$ is 2.3×10^{-5}, then its susceptibility at a temperature of $467\ ^\circ\mathrm{C}$ is

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(A) 2.3×10^{-6}
(B) 6.9×10^{-6}
(C) 9.2×10^{-6}
(D) 4.6×10^{-6}

Answer: (C) 9.2×10^{-6} · The council's preliminary key

Q16 TS EAPCET 2026 · 9 May · Shift 2 MCQ

The magnetic field at a point A on the axis of a short bar magnet is 1500% more than the magnetic field at a point B on the normal bisector of the magnet. If the distance of point A from the centre of the magnet is 18 cm, then the distance of point B from the centre of the magnet is

(A) 72 cm
(B) 36 cm
(C) 48 cm
(D) 54 cm

Answer: (B) 36 cm · The council's preliminary key

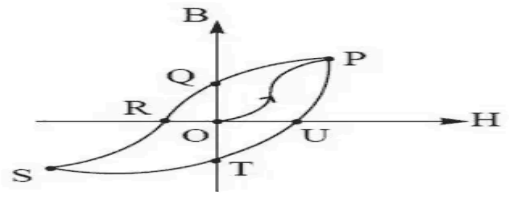
Q17 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If the given figure shows the relation between magnetic field (B-along y-axis) and magnetic intensity (H-along x-axis) of a ferromagnetic material, then the point that represents coercivity of the material is

(see the figure above)

If the given figure shows the relation between magnetic field (B-along y-axis) and magnetic intensity (H-along x-axis) of a ferromagnetic material, then the point that represents coercivity of the material is

ఒక ఫెర్రో అయస్కాంత పదార్థం యొక్క అయస్కాంత క్షేత్రం (B ను y-అక్షంపై) మరియు అయస్కాంత తీవ్రత (H ను x-అక్షంపై) ల సంబంధం పటంలో చూపిన విధంగా ఉన్న, ఆ పదార్థపు నిగ్రహతను సూచించే బిందువు



Options :
1. P
2. Q
3. R
4. S

(A) P
(B) Q
(C) R
(D) S

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

Q18 AP EAPCET 2025 · 26 May · Shift 2 MCQ

A sample of a ferromagnetic iron in the shape of a cube of side $1.0\ \mu\text{m}$ contains 8.7×10^{28} atoms per cubic metre and the magnetic dipole moment of each iron atom is $9.3 \times 10^{-24}\ \text{Am}^2$. Then the maximum possible magnetic dipole moment (in A m^2) of the sample is nearly

(A) 8.1×10^{-12}
(B) 8.1×10^{-14}
(C) 81×10^{-14}
(D) 81×10^{-16}

Answer: (C) 81×10^{-14} · The council's preliminary key

Q19 AP EAPCET 2025 · 24 May · Shift 1 MCQ

A sample of paramagnetic salt contains 2×10^{24} atomic dipoles each of dipole moment $1.5 \times 10^{-23}\ \text{J T}^{-1}$. The sample is placed under homogeneous magnetic field of 0.6 T and cooled to a temperature 4.2 K. The degree of magnetic saturation achived is 20%. Then total dipole moment of the sample for a magnetic field of 0.9 T and a temperature of 2.8 K is

(A) $4.5\ \text{J T}^{-1}$
(B) $13.5\ \text{J T}^{-1}$
(C) $0.64\ \text{J T}^{-1}$
(D) $7\ \text{J T}^{-1}$

Answer: (B) $13.5\ \text{J T}^{-1}$ · The council's preliminary key

Q20 AP EAPCET 2025 · 23 May · Shift 1 MCQ

Materials suitable for permanent magnets should have

(A) low retentivity and low coercivity
(B) low retentivity and high coercivity
(C) high retentivity and low coercivity
(D) high retentivity and high coercivity

Answer: (D) high retentivity and high coercivity · The council's preliminary key

Q21 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The work done in rotating a bar magnet which is initially in the direction of a uniform magnetic field through 45° is W. The additional work to be done to rotate the magnet further through 15° is

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

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

Q22 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A short bar magnet has a magnetic moment of $0.48\ \mathrm{J\,T^{-1}}$. The magnitude of magnetic field at a point at 10 cm distance from the centre of the magnet on its axis is

(A) 0.96 gauss
(B) 0.48 gauss
(C) 1.92 gauss
(D) 1.44 gauss

Answer: (A) 0.96 gauss · The council's preliminary key

Q23 AP EAPCET 2025 · 22 May · Shift 2 MCQ

A short bar magnet of magnetic moment $10^4\ \mathrm{J\,T^{-1}}$ is free to rotate in a horizontal plane. The work done in rotating the magnet slowly from the direction parallel to a horizontal magnetic field of $4 \times 10^{-5}\ \mathrm{T}$ to a direction 60° to the direction of the field is

(A) $0.2\ \mathrm{J}$
(B) $2.6\ \mathrm{J}$
(C) $0.4\ \mathrm{J}$
(D) $6.2\ \mathrm{J}$

Answer: (A) $0.2\ \mathrm{J}$ · The council's preliminary key

Q24 AP EAPCET 2025 · 21 May · Shift 2 MCQ

A short bar magnet is placed in a uniform magnetic field of $2\ \mathrm{T}$ such that the axis of the magnet makes an angle of 45° with the direction of the magnetic field. If the torque acting on the magnet is $0.36\sqrt{2}\ \mathrm{N\,m}$, then the moment of the magnet is

(A) $0.54\ \mathrm{J\,T^{-1}}$
(B) $0.18\ \mathrm{J\,T^{-1}}$
(C) $0.72\ \mathrm{J\,T^{-1}}$
(D) $0.36\ \mathrm{J\,T^{-1}}$

Answer: (D) $0.36\ \mathrm{J\,T^{-1}}$ · The council's preliminary key

Q25 TS EAPCET 2025 · 4 May · Shift 1 MCQ

A short bar magnet of magnetic moment $2.5\ \mathrm{Am^2}$ is kept in a uniform magnetic field of $4 \times 10^{-5}\ \mathrm{T}$. The work done in moving the magnet from its most stable position to most unstable position is

(A) $40 \times 10^{-5}\ \mathrm{J}$
(B) $25 \times 10^{-5}\ \mathrm{J}$
(C) $10 \times 10^{-5}\ \mathrm{J}$
(D) $20 \times 10^{-5}\ \mathrm{J}$

Answer: (D) $20 \times 10^{-5}\ \mathrm{J}$ · The council's preliminary key

Q26 TS EAPCET 2025 · 4 May · Shift 2 MCQ

At a certain place in the magnetic meridian, the earth's magnetic field is twice its vertical component. The ratio of horizontal component of earth's magnetic field and the total magnetic field of the earth at that place is

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

Answer: (A) $\sqrt{3} : 2$ · The council's preliminary key

Q27 TS EAPCET 2025 · 3 May · Shift 1 MCQ

The magnetic field at a point P on the axis of a short bar magnet of magnetic moment M is B. If another short bar magnet of magnetic moment 2M is placed on the first magnet such that their axes are perpendicular and their centres coincide. The resultant magnetic field at the point P due to both the magnets is

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

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

Q28 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the magnetic susceptibility of a substance is 0.6, then the ratio of permeability of the substance and permeability of free space is

(A) $6:5$
(B) $7:4$
(C) $8:5$
(D) $3:5$

Answer: (C) $8:5$ · The council's preliminary key

Q29 TS EAPCET 2025 · 2 May · Shift 2 MCQ

If $\mathrm{B_V}$ and $\mathrm{B_H}$ are respectively the vertical and horizontal components of the earth's magnetic field at a place where the angle of dip is 60°, then the total magnetic field at that place is

(A) $\sqrt{3}\mathrm{B_H}$
(B) $\sqrt{3}\mathrm{B_V}$
(C) $\frac{2}{\sqrt{3}}\mathrm{B_V}$
(D) $\frac{\sqrt{3}}{2}\mathrm{B_H}$

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

Q30 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The relation between μ and H for a specimen of iron is $\mu = \left[\frac{0.4}{H} + 12 \times 10^{-4}\right] \mathrm{Hm^{-1}}$. The value of H which produces flux density of 1 T will be (μ = magnetic permeability, H = magnetic intensity)

(A) $250\ \mathrm{Am^{-1}}$
(B) $500\ \mathrm{Am^{-1}}$
(C) $750\ \mathrm{Am^{-1}}$
(D) $10^3\ \mathrm{Am^{-1}}$

Answer: (B) $500\ \mathrm{Am^{-1}}$ · The council's preliminary key

Q31 AP EAPCET 2024 · 22 May · Shift 1 MCQ

One bar magnet is in simple harmonic motion with time period T in an earth's magnetic field. If its mass is increased by 9 times the time period becomes

(A) $3T$
(B) $9T$
(C) $4T$
(D) $\sqrt{3}T$

Answer: (A) $3T$ · The council's preliminary key

Q32 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A short magnet oscillates with a time period $0.1\ s$ at a place where horizontal magnetic field is $24\ \mu\mathrm{T}$. A downward current of $18\ A$ is established in a vertical wire kept at a distance of $20\ cm$ east of the magnet. The new time period of oscillations of the magnet is

(A) $0.1\ s$
(B) $0.089\ s$
(C) $0.076\ s$
(D) $0.057\ s$

Answer: (C) $0.076\ s$ · The council's preliminary key

Q33 AP EAPCET 2024 · 21 May · Shift 1 MCQ

If the vertical component of the earth's magnetic field is 0.45 G at a location, and angle of dip is 60°, then magnetic field of earth in that location is

(A) 0.26 G
(B) 0.52 G
(C) 0.3 G
(D) 0.7 G

Answer: (B) 0.52 G · The council's preliminary key

Q34 AP EAPCET 2024 · 21 May · Shift 2 MCQ

At a place the horizontal component of earth's magnetic field is 3×10^{-5} T and the magnetic declination is 30°. A compass needle of magnetic moment $18\ \mathrm{Am}^2$ pointing towards geographic north at this place experiences a torque of

(A) 36×10^{-5} Nm
(B) 18×10^{-5} Nm
(C) 54×10^{-5} Nm
(D) 27×10^{-5} Nm

Answer: (D) 27×10^{-5} Nm · The council's preliminary key

Q35 AP EAPCET 2024 · 20 May · Shift 1 MCQ

Any magnetic material loses its magnetic property, when it is

(A) Dipped in water
(B) Dipped in sand
(C) Attached to an iron piece
(D) Heated to high temperature

Answer: (D) Heated to high temperature · The council's preliminary key

Q36 AP EAPCET 2024 · 20 May · Shift 2 MCQ

At a place where the magnitude of the earth's magnetic field is 4×10^{-5} T, a short bar magnet is placed with its axis perpendicular to the earth's magnetic field direction. If the resultant magnetic field at a point at a distance of 40 cm from the centre of the magnet on the normal bisector of the magnet is inclined at 45° with the earth's field, then the magnetic moment of the magnet is

(A) $38.4\ \mathrm{Am}^2$
(B) $51.2\ \mathrm{Am}^2$
(C) $12.8\ \mathrm{Am}^2$
(D) $25.6\ \mathrm{Am}^2$

Answer: (D) $25.6\ \mathrm{Am}^2$ · The council's preliminary key

Q37 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The domain in ferromagnetic material is in the form of a cube of side $2\ \mu\mathrm{m}$. Number of atoms in that domain is 9×10^{10} and each atom has a dipole movement of $9 \times 10^{-24}\ \mathrm{Am}^2$. The magnetisation of the domain is (approximately).

(A) $10 \times 10^4\ \mathrm{Am}^{-1}$
(B) $8 \times 10^4\ \mathrm{Am}^{-1}$
(C) $12 \times 10^4\ \mathrm{Am}^{-1}$
(D) $9 \times 10^4\ \mathrm{Am}^{-1}$

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

Q38 AP EAPCET 2024 · 18 May · Shift 1 MCQ

A magnet suspended in a uniform magnetic field is heated so as to reduce its magnetic moment by 19%. By doing this, the time period of the magnet approximately

(A) Increases by 11%
(B) Decreases by 19%
(C) Increases by 19%
(D) Decreases by 4%

Answer: (A) Increases by 11% · The council's preliminary key

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Q39 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The magnetizing field which produces a magnetic flux of 22×10^{-6} Wb in a metal bar of area of cross-section $2 \times 10^{-5}\ \mathrm{m}^2$ is (susceptibility of the metal = 699)

(A) $2500\ \mathrm{Am}^{-1}$
(B) $1250\ \mathrm{Am}^{-1}$
(C) $3750\ \mathrm{Am}^{-1}$
(D) $5000\ \mathrm{Am}^{-1}$

Answer: (B) $1250\ \mathrm{Am}^{-1}$ · The council's preliminary key

Q40 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A circular coil carrying a current of 2.5 A is free to rotate about an axis in its plane perpendicular to an external magnetic field. When the coil is made to oscillate, the time period of oscillation is T. If the current through the coil is 10 A, the time period of oscillation is

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

Answer: (A) $\frac{T}{2}$ · The council's preliminary key

Q41 TS EAPCET 2024 · 10 May · Shift 2 MCQ

A short bar magnet placed in a uniform magnetic field making an angle with the field experiences a torque. If the angle made by the magnet with field is changed from 30° to 45°, the torque on the magnet

(A) increases by 50%
(B) decreases by 50%
(C) decreases by 41.4%
(D) increases by 41.4%

Answer: (D) increases by 41.4% · The council's preliminary key

Q42 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The most exotic diamagnetic materials are

(A) Superconductors
(B) Semiconductors
(C) Conductors
(D) Resistors

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

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Q43 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If a bar magnet of moment $10^{-4}\ \mathrm{Am}^2$ is kept in a uniform magnetic field of 12×10^{-3} T such that it makes an angle of 30° with the direction of magnetic field, then the torque acting on the magnet is

(A) 6×10^{-7} Nm
(B) 6×10^{-5} Nm
(C) 12×10^{-7} Nm
(D) 12×10^{-5} Nm

Answer: (A) 6×10^{-7} **Nm** · The council's preliminary key

Q44 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The magnetic field lines of a bar magnet

(A) leave from the south pole of the magnet
(B) are absent inside the magnet
(C) intersect each other
(D) form continuous closed loops

Answer: (D) form continuous closed loops · The council's preliminary key

Q45 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Which of the following do not exist?

(A) Electric dipoles
(B) Electric monopoles
(C) Magnetic monopoles
(D) Magnetic dipoles

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

Q46 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Curl the palm of your right hand around the circular wire with the fingers pointing in the direction of current and the thumb gives the direction of the magnetic field. In this case the upper side of the loop may be thought of as

(A) direction of current
(B) direction of electric field
(C) south pole
(D) north pole

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

EdLoop EAPCET

Q47 AP EAPCET 2023 · 17 May · Shift 1 MCQ

The Curie temperature $\mathrm{T_C}$ represents

(A) temperature of transition from paramagnetic to ferromagnetic
(B) temperature of transition from paramagnetic to diamagnetic
(C) temperature of transition from ferromagnetic to paramagnetic
(D) temperature of transition from diamagnetic to paramagnetic

Answer: (C) temperature of transition from ferromagnetic to paramagnetic · The council's preliminary key

Q48 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The axial field ($\mathrm{B_A}$) and the equatorial field ($\mathrm{B_E}$) due to a short bar magnet at equal distances are related as

(A) $\mathrm{B_A} = 2\,\mathrm{B_E}$
(B) $\mathrm{B_A} = -2\,\mathrm{B_E}$
(C) $\mathrm{B_A} = -\mathrm{B_E}$
(D) $\mathrm{B_A} = -2\pi\,\mathrm{B_E}$

Answer: (B) $\mathrm{B_A} = -2\,\mathrm{B_E}$ · The council's preliminary key

Q49 AP EAPCET 2023 · 16 May · Shift 1 MCQ

In some ferromagnetic materials magnetization disappears on the removal of the external magnetic field. Such materials are called

(A) soft ferromagnetic materials
(B) hard ferromagnetic materials
(C) anti-ferromagnetic materials
(D) semiconductors

Answer: (A) soft ferromagnetic materials · The council's preliminary key

Q50 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The magnitude of the axial field due to a short bar magnet at a distance of 50 cm from its mid-point is

(The magnetic moment of the bar magnet is $0.4\ \mathrm{Am^2}$)

(A) $3.2 \times 10^{-7}\,\mathrm{T}$
(B) $1.6 \times 10^{-7}\,\mathrm{T}$
(C) $6.4 \times 10^{-7}\,\mathrm{T}$
(D) $4.8 \times 10^{-7}\,\mathrm{T}$

Answer: (C) $6.4 \times 10^{-7}\,\mathrm{T}$ · The council's preliminary key

Q51 AP EAPCET 2023 · 15 May · Shift 2 MCQ

One of the following substances having the tendency to move from stronger region to the weaker region of the magnetic field is

(A) paramagnetic
(B) ferromagnetic
(C) diamagnetic
(D) ferrimagnetic

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

Q52 TS EAMCET 2023 · 14 May · Shift 1 MCQ

If χ is the susceptibility and μ_r is the relative permeability of a ferromagnetic substance, then

(A) $\chi \ll 1$
(B) $\mu_r \ll 1$
(C) $\mu_r = 0$
(D) $\chi \gg 1$

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

Q53 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A bar magnet of magnetic moment $2\ \mathrm{Am}^2$ lies aligned with the direction of a uniform magnetic field of $0.3\ \mathrm{T}$. The amount of work required by an external torque to turn the magnet so as to align its magnetic moment normal to the field direction is

(A) 0.15 J
(B) 0.3 J
(C) 0.6 J
(D) 1.2 J

Answer: (C) 0.6 J · The council's preliminary key

Q54 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Materials suitable for permanent magnets, must have which of the following properties?

(A) High retentivity, low coercivity and high permeability.
(B) Low retentivity, low coercivity and low permeability.
(C) Low retentivity, high coercivity and low permeability.
(D) High retentivity, high coercivity and high permeability.

Answer: (D) High retentivity, high coercivity and high permeability. · The council's preliminary key

EdLoop EAPCET

Q55 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The period of oscillation of a bar magnet at a place is 2 s. At the same place, the period of oscillation of another identical bar magnet whose magnetic moment is 4 times to that of first magnet is

(A) 4 s
(B) 1 s
(C) 2 s
(D) 0.5 s

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

Q56 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A bar magnet has coercivity $4 \times 10^3\ \mathrm{Am}^{-1}$. It is placed inside a solenoid of 12 cm length and 60 turns. The current that should be passed through the solenoid to demagnetise the bar magnet is

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

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

Q57 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The magnetic susceptibility of ferromagnetic materials is

(A) < 0
(B) > 1
(C) 1
(D) 0

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

Q58 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

An iron bar having a cross sectional area of 2×10^{-5} m^2 and magnetising field of 2400 A/m produce a magnetic flux of $2.4\,\pi \times 10^{-5}$ Wb. What will be the value of permeability (μ) and susceptibility (χ) of the bar (Given $\mu_0 = 4\pi \times 10^{-7}$)

(A) $\mu = 5 \times 10^{-4},\ \chi = 1249\pi$
(B) $\mu = 5\pi \times 10^{-4},\ \chi = 1249\pi$
(C) $\mu = 5\pi \times 10^{-4},\ \chi = 1249$
(D) $\mu = 5 \times 10^{-4},\ \chi = 1249$

Answer: (C) $\mu = 5\pi \times 10^{-4},\ \chi = 1249$ · The council's preliminary key

Q59 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

In the magnetic meridian of a certain place, the horizontal component of the earth's magnetic field is 86.6 G (Gauss) and the magnetic field of earth is 100 G (Gauss). Then the dip angle is

(A) 45°
(B) 60°
(C) 30°
(D) 75°

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

Q60 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A thin magnetic needle is placed in a magnetic field of 200 G with its axis at 30° to the direction of the field. Find the magnetic moment of the needle if it experiences a torque of 0.012 Nm in this field.

(A) $1.2\ \mathrm{Am}^2$
(B) $12.0\ \mathrm{Am}^2$
(C) $0.6\ \mathrm{Am}^2$
(D) $6.0\ \mathrm{Am}^2$

Answer: (A) $1.2\ \mathrm{Am}^2$ · The council's preliminary key

Q61 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The magnitude of axial field due to a bar magnet at a distance of 1 m, is found to be 5×10^{-8}T. The magnetic moment of the bar magnet is $\left(\mu_0 = 4\pi \times 10^{-7}\right)$

(A) $0.20\ \mathrm{Am}^2$
(B) $0.25\ \mathrm{Am}^2$
(C) $0.50\ \mathrm{Am}^2$
(D) $0.40\ \mathrm{Am}^2$

Answer: (B) $0.25\ \mathrm{Am}^2$ · The council's preliminary key

Q62 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A planet has magnetic dipole moment of $27 \times 10^{22}\ \mathrm{Am}^2$. If the radius of the planet is 300 km, what would be the magnetic field at its equator?
$\frac{\mu_0}{4\pi} = 10^{-7}$

(A) $1\ \mathrm{T}$
(B) $27\ \mathrm{T}$
(C) $11\ \mathrm{T}$
(D) $30\ \mathrm{T}$

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

Q63 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Assertion (A) : The magnetic field lines are continuous and form closed loops.
Reason (R) : Magnetic monopole does not exist.
The correct option among the following is

(A) (A) is true, (R) is true and (R) is the correct explanation for (A)
(B) (A) is true, (R) is true but (R) is not the correct explanation for (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

Answer: (A) (A) is true, (R) is true and (R) is the correct explanation for (A) · The council's preliminary key

Q64 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A bar magnet of length 16 cm is placed in the magnetic meridian with the N- pole pointing towards geographical north. Two neutral points separated by 12 cm are obtained on the equatorial line of the magnet. If the horizontal component of earth's magnetic field $= 3.2 \times 10^{-5}$ T, then the pole strength of magnet is

(A) $0.25\ \mathrm{Am}$
(B) $0.5\ \mathrm{Am}$
(C) $1\ \mathrm{Am}$
(D) $2\ \mathrm{Am}$

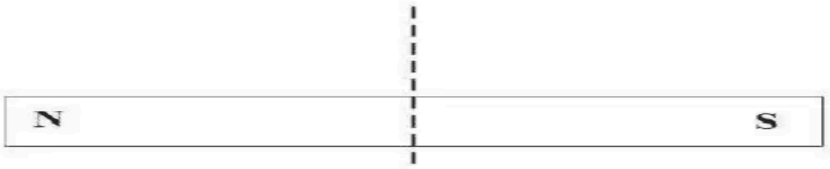
Answer: (D) $2\ \mathrm{Am}$ · The council's preliminary key

Q65 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

If a bar magnet is cut along the dotted line as shown in the figure and the two pieces are held separated by a small distance as they are, then
(see the figure above)

If a bar magnet is cut along the dotted line as shown in the figure and the two pieces are held separated by a small distance as they are, then

పటము లో చూపినట్లు ఒక దండయస్కాంతాన్ని చుక్కల గీత వెంబడి రెండు ముక్కలుగా చేసి ఆ ముక్కలను అదే విధంగా కొంత దూరంలో వేరు చేసిన



Options :

1. They repel each other.
అవి ఒకదానినొకటి వికర్షించు కొనును

2. They attract each other.
అవి ఒకదానినొకటి ఆకర్షించు కొనును

3. They do not experience any force on each other.
అవి వాటి మధ్య ఎలాంటి బలాన్ని ప్రదర్శించవు.

4. Will repel or attract depending on the location of cut.
విడగొట్ట బడిన ప్రాంతాన్ని బట్టి ఆ ముక్కలు వికర్షించు కోవచ్చు లేదా ఆకర్షించు కోవచ్చు

(A) They repel each other.
(B) They attract each other.
(C) They do not experience any force on each other.
(D) Will repel or attract depending on the location of cut.

Answer: (B) They attract each other. · The council's preliminary key

Q66 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A short bar magnet produces a magnetic field of 6.4×10^{-5} T at a distance of 20 cm from the center of the magnet on the normal bisector of the magnet. The magnetic field produced by this magnet at a distance of 40 cm from the center of the magnet on the axis, is

(A) 4.8×10^{-5} T
(B) 3.2×10^{-5} T
(C) 1.6×10^{-5} T
(D) 6.4×10^{-5} T

Answer: (C) 1.6×10^{-5} T · The council's preliminary key

Q67 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A short magnetic needle is placed in a magnetic field $B\hat{i}$ in the direction $(\sqrt{3}\,\hat{i} + \hat{j})$. The needle experiences a torque of 0.06 Nm. If the same magnetic needle is placed in a magnetic field $2B\hat{j}$ in the direction $(\hat{i} + \sqrt{3}\,\hat{j})$, the torque experienced by it is

(A) 0.12 Nm
(B) 0.84 Nm
(C) 0.10 Nm
(D) 0.03 Nm

Answer: (A) 0.12 Nm · The council's preliminary key

Q68 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A vibration magnetometer is used at two different places A and B on the earth. The time period of a magnet suspended freely in the magnetometer at A is twice that at B. If the horizontal component of the earth's magnetic field at B is 32×10^{-6} T, then its value at A is

(A) $H_A = 8 \times 10^{-6}$ T
(B) $H_A = 32 \times 10^{-6}$ T
(C) $H_A = 4 \times 10^{-6}$ T
(D) $H_A = 16 \times 10^{-6}$ T

Answer: (A) $H_A = 8 \times 10^{-6}$ T · The council's preliminary key

Q69 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A short bar magnet placed in a horizontal plane has its axis aligned along north-south direction. Null points are found on the axis of the magnet at 20 cm from the center of magnet. The earth's magnetic field at the place is B and angle of dip is 0°. If the total magnetic field on the normal bisector of the magnet 20 cm from the center of the magnet is 0.6 G, then the magnitude of B is

(A) 0.2 G
(B) 0.4 G
(C) 1.2 G
(D) 0.3 G

Answer: (B) 0.4 G · The council's preliminary key

Q70 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Two short magnets of equal dipole moments M are fastened perpendicularly at their centers. The magnitude of the magnetic field at a distance d from the centre on the bisector of the right angle is ($\mu_\circ$ - Permeability of free space)

(A) $\frac{\mu_\circ}{4\pi}\frac{2\sqrt{2}M}{d^3}$
(B) $\frac{\mu_\circ}{4\pi}\frac{5M}{d^3}$
(C) $\frac{\mu_\circ}{4\pi}\frac{2M}{d^3}$
(D) $\frac{\mu_\circ}{4\pi}\frac{10M}{d^3}$

Answer: (A) $\frac{\mu_\circ}{4\pi}\frac{2\sqrt{2}M}{d^3}$ · The council's preliminary key

Q71 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A short bar magnet placed with its axis at 45° with a uniform external magnetic field of 28.3×10^{-3} T experiences a torque of magnitude equal to 3.6×10^{-5} J. The magnitude of magnetic moment of the magnet is nearly

(A) $1.8 \times 10^{-3}\ \mathrm{J\,T^{-1}}$
(B) $1.2 \times 10^{-3}\ \mathrm{J\,T^{-1}}$
(C) $2.4 \times 10^{-3}\ \mathrm{J\,T^{-1}}$
(D) $1.6 \times 10^{-3}\ \mathrm{J\,T^{-1}}$

Answer: (A) $1.8 \times 10^{-3}\ \mathrm{J\,T^{-1}}$ · The council's preliminary key

Q72 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A compass needle oscillates 20 times per minute at a place where the dip is 45° and the magnetic field is B_1. The same needle oscillates 30 times per minute at a place where the dip is 30° and magnetic field is B_2. Then $B_1 : B_2$ is

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

Answer: (D) $2\sqrt{2} : 3\sqrt{3}$ · The council's preliminary key

Q73 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A steel wire of length l and magnetic moment M is bent into a semicircular arc of radius R. The new magnetic moment is

(A) M
(B) $\frac{2RM}{\pi l}$
(C) $\frac{2M}{\pi}$
(D) $\frac{2\pi RM}{l}$

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

Q74 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A magnetic needle free to rotate in a vertical plane parallel to the magnetic meridian has its north tip pointing down at 30° with the horizontal. The horizontal component of the earth's magnetic field at the place is 0.3 G. Then the magnitude of the earth's magnetic field at the location is

(A) $\frac{\sqrt{3}}{5}$ G
(B) $\sqrt{3}$ G
(C) $\frac{20}{\sqrt{3}}$ G
(D) $\frac{2}{\sqrt{3}}$ G

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

Q75 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

A magnet of magnetic moment $2\ \mathrm{J.T^{-1}}$ is aligned in the direction of magnetic field of $0.1\ \mathrm{T}$. What is the net work done to bring the magnet normal to the magnetic field?

(A) $0.1\ \mathrm{J}$
(B) $0.2\ \mathrm{J}$
(C) $1.0\ \mathrm{J}$
(D) $2.0\ \mathrm{J}$

Answer: (B) $0.2\ \mathrm{J}$ · The council's preliminary key

Q76 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Torques τ_1 and τ_2 are required for a magnetic needle to remain perpendicular to the magnetic fields B_1 and B_2 at two different places. The ratio $B_1 : B_2$ is

(A) $\tau_2 : \tau_1$
(B) $\tau_1 : \tau_2$
(C) $\frac{\tau_1+\tau_2}{\tau_1-\tau_2}$
(D) $\frac{\tau_1-\tau_2}{\tau_1+\tau_2}$

Answer: (B) $\tau_1 : \tau_2$ · The council's preliminary key

Q77 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

When a piece of a magnetic substance is put in a uniform magnetic field, the flux density inside it is four times the flux density away from the piece. The magnetic permeability of the material is _____

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

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

Q78 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

A paramagnetic sample showing a net magnetization of $0.8\ A.m^{-1}$, when placed in an external magnetic field of strength $0.8\ T$, at a remperature (sic) $5\ K$. If the temperature is raised to $20\ K$, then

the magnetization becomes _____.

(A) $0.8\ A.m^{-1}$

(B) $0.2\ A.m^{-1}$

(C) $0.1\ A.m^{-1}$

(D) $0.4\ A.m^{-1}$

Answer: (B) $0.2\ A.m^{-1}$ · The council's preliminary key

Q79 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The plane of a dip circle is set in the geographic meridian and the apparent dip is δ_1. It is then set in a vertical plane perpendicular to the geographic meridian. The apparent dip angle is δ_2. The declination θ at the place is

(A) $\tan^{-1}(\tan\delta_1\ \tan\delta_2)$

(B) $\tan^{-1}(\tan\delta_1 + \tan\delta_2)$

(C) $\tan^{-1}\left(\frac{\tan\delta_1}{\tan\delta_2}\right)$

(D) $\tan^{-1}(\tan\delta_1 - \tan\delta_2)$

Answer: (C) $\tan^{-1}\left(\frac{\tan\delta_1}{\tan\delta_2}\right)$ · The council's preliminary key

Q80 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The susceptibility of Al is 2×10^{-5}. The percent increase in the magnetic field when the space within a current carrying toroid to filled with Al is:

(A) 2×10^{-2}

(B) 2×10^{-3}

(C) 2×10^{-4}

(D) 2×10^{-5}

Answer: (B) 2×10^{-3} · The council's preliminary key

Q81 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The direction of Earth's magnetic field at the magnetic poles is

(A) Purely vertical

(B) Purely horizontal

(C) 45° between horizontal and vertical

(D) 30° to vertical

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

Q82 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A magnetic dipole is placed horizontally with the north pole pointing towards north. The horizontal component of earth's magnetic field is 20 μT. If the neutral point is found at a distance of 20 cm in the plane bisecting the dipole then the magnetic moment of the dipole is
(Assume $\mu_0 = 4\pi \times 10^{-7}$ S.I. units)

(A) 1.2 Am^2
(B) 2.2 Am^2
(C) 1.4 Am^2
(D) 1.6 Am^2

Answer: (D) 1.6 Am^2 · The council's preliminary key

Q83 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A solenoid has a core of a material with relative permeability 501. The windings of the solenoid are insulated from the core and carry a current of 2.5 A. If the number of turns are 900 per metre. The magnetization in A/m is

(A) 1.125×10^6
(B) 2.8×10^6
(C) 2.25×10^6
(D) 1.69×10^6

Answer: (A) 1.125×10^6 · The council's preliminary key

Q84 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The plane of a dip circle is set in the geographic meridian and the apparent dip is δ_1. It is then set in a vertical plane perpendicular to the geographic meridian. The apparent dip angle is δ_2. The declination θ at the place is _____

(A) $\theta = \mathrm{Tan}^{-1}(\tan\delta_1 . \tan\delta_2)$
(B) $\theta = \mathrm{Tan}^{-1}(\tan\delta_1 + \tan\delta_2)$
(C) $\theta = \mathrm{Tan}^{-1}\left(\frac{\tan\delta_1}{\tan\delta_2}\right)$
(D) $\theta = \mathrm{Tan}^{-1}(\tan\delta_1 - \tan\delta_2)$

Answer: (C) $\theta = \mathrm{Tan}^{-1}\left(\frac{\tan\delta_1}{\tan\delta_2}\right)$ · The council's preliminary key

Q85 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

A thin rod of length L is magnetized and has magnetic moment M. The rod is then bent in a semicircular arc. The magnetic moment in the new shape is

(A) $\frac{M}{L}$
(B) $\frac{M}{\pi}$
(C) $\frac{M}{2\pi}$
(D) $\frac{2M}{\pi}$

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

Q86 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

If the dipole moment of a short bar magnet is $1.25\ A-m^2$, find the magnetic field on its axis at a distance of $0.5\ \mathrm{m}$ from the center of the magnet.

(A) $1.0 \times 10^{-4}\ \mathrm{N.A^{-1}.m^{-1}}$
(B) $4.0 \times 10^{-2}\ \mathrm{N.A^{-1}.m^{-1}}$
(C) $2.0 \times 10^{-6}\ \mathrm{N.A^{-1}.m^{-1}}$
(D) $6.64 \times 10^{-8}\ \mathrm{N.A^{-1}.m^{-1}}$

Answer: (C) $2.0 \times 10^{-6}\ \mathrm{N.A^{-1}.m^{-1}}$ · The council's preliminary key

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Q87 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

A bar magnet of length 10 cm and having the pole strength equal to 10^{-3} W is kept in a magnetic field having magnetic induction (B) equal to $4\pi \times 10^{-3}\ \mathrm{T}$. It makes an angle of 30° with the direction of magnetic induction. The value of the torque acting on the magnet is

(A) $2\pi \times 10^{-7}\ \mathrm{N.m}$
(B) $2\pi \times 10^{-5}\ \mathrm{N.m}$
(C) $0.5\ \mathrm{N.m}$
(D) $0.5 \times 10^{2}\ \mathrm{N.m}$

Answer: (A) $2\pi \times 10^{-7}\ \mathrm{N.m}$ · The council's preliminary key

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Q88 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Two identical thin bar magnets, each of length 'l' and pole strength 'm', are placed at right angle to each other with north pole of one touching south pole of the other. The magnetic moment of the system is

(A) $0.5\,l\,m$
(B) $l\,m$
(C) $2\,l\,m$
(D) $\sqrt{2}\,l\,m$

Answer: (D) $\sqrt{2}\,l\,m$ · The council's preliminary key

Q89 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

A magnetic needle lying parallel to a magnetic field requires W units of work to turn it through 60°. The torque required to maintain the needle in this position will be

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

Answer: (A) $\sqrt{3}\,W$ · The council's preliminary key

Q90 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

A magnet of magnetic moment M is rotated through 360° in a magnetic field H, the work done will be

(A) MH
(B) $2MH$
(C) $2\pi MH$
(D) 0

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

Q91 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Unit of pole strength of a magnet is _____

(A) $A.m^{-1}$
(B) $A.m^{2}$
(C) $A.m^{-2}$
(D) $A.m$

Answer: (D) $A.m$ · The council's preliminary key

Q92 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

If the angles of dip at two places are 30° and 45° respectively, then the ratio of horizontal components of earth's magnetic field at the two places will be _____

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

Answer: (A) $\sqrt{3} : \sqrt{2}$ · The council's preliminary key

EdLoop EAPCET

Q93 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The deflection produced in a tangent galvanometer whose coil has a resistance of 9 Ω is 30°. The potential difference across the coil is 4.5 V. If the number of turns in the coil is 10, the radius of the coil is _____ (given $B_H = 3.14 \times 10^{-5}$ T)

(A) $2\sqrt{3} \times 10^{-2}$ m
(B) $10\sqrt{3} \times 10^{-2}$ m
(C) 6×10^{-2} m
(D) 3.5×10^{-2} m

Answer: (B) $10\sqrt{3} \times 10^{-2}$ m · The council's preliminary key

Q94 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A short bar magnet placed with its axis at 30^0 with an external field of 800G experiences a torque of 0.016 Nm. The magnetic moment of the bar magnet is

(A) 0.4 Am^2
(B) 0.5 Am^2
(C) 0.6 Am^2
(D) 0.7 Am^2

Answer: (A) 0.4 Am^2 · Official TGCHE final key

Q95 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Which of the following is desirable for making permanent magnets?

(A) Low coercive field and low retentivity
(B) Low coercive field and high retentivity
(C) High coercive field and high retentivity
(D) High coercive field and low retentivity

Answer: (C) High coercive field and high retentivity · Official TGCHE final key

Q96 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

Let m and r are the dipole moment and radius of earth respectively. Then the earth's magnetic field at the equator is

(A) $\frac{\mu_0}{4\pi}\frac{m}{r^3}$
(B) $\frac{\mu_0}{8\pi}\frac{m}{r^3}$
(C) $\frac{\mu_0}{2\pi}\frac{m}{r^3}$
(D) $\frac{\mu_0}{\pi}\frac{m}{r^3}$

Answer: (A) $\frac{\mu_0}{4\pi}\frac{m}{r^3}$ · Official TGCHE final key

Q97 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If relative permeability of iron is 5500, then its susceptibility is

(A) 5500×10^7
(B) 5500×10^{-7}
(C) 5501
(D) 5499

Answer: (D) 5499 · Official TGCHE final key

Q98 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Two tangent galvanometers A & B have coils of radii 8 cm and 16 cm respectively and having resistance of 8 Ω each. They are connected in parallel with a cell of emf 4V and negligible internal resistance. The deflections produced in the tangent galvanometers A and B are 30^0 and 60^0 respectively. If A has 2 turns, then B must have

(A) 18 turns
(B) 12 turns
(C) 6 turns
(D) 2 turns

Answer: (B) 12 turns · Official TGCHE final key

Q99 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Two short magnets of equal dipole moments M are fastened perpendicularly at their centres which lies at origin. Let two magnets lie along x-axis and y–axis respectively. The magnitude of the magnetic field at a distance R from the centre on the y-axis is $\frac{\mu_0}{4\pi}\frac{M_0}{R^3}$. Assuming R >>$l$ (magnet length), the magnitude of M is

(A) $\frac{M_0}{2\sqrt{2}}$
(B) $\frac{M_0}{2}$
(C) $\frac{M_0}{\sqrt{5}}$
(D) $\frac{M_0}{\sqrt{2}}$

Answer: (C) $\frac{M_0}{\sqrt{5}}$ · Official TGCHE final key

Q100 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The length l of a magnet is large compared to its width and breadth. The time period of its oscillation in a vibration magnetometer is 2s. The magnet is cut into three equal parts of length $\frac{l}{3}$ each. If these parts are placed on each other with their like poles together, then the time period of this combination is

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

Answer: (B) $\frac{2}{3}$ s · Official TGCHE final key

Q101 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

A bar magnet having magnetic moment M is bent as an arc. Its magnetic moment

(A) decreases
(B) increases
(C) does not change
(D) may increase or decrease

Answer: (A) decreases · Official TGCHE final key

Q102 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Identify the incorrect statement from the following.

(A) The susceptibility of a diamagnetic material is a positive quantity.
(B) Paramagnetic materials obey Curie's law.
(C) Ferromagnetic materials have permanent magnetic domains.
(D) In soft ferromagnetic material, the magnetization disappear on removal of external field.

Answer: (A) The susceptibility of a diamagnetic material is a positive quantity. · Official TGCHE final key

Q103 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The earth's magnetic field at the geometric poles is $\sqrt{40} \times 10^{-5}$ T. The magnitude of the field at a point on earth's surface where the radius makes an angle θ with the axis of earth's assumed magnetic dipole is 5×10^{-5} T. The magnitude of θ in degrees is

(A) 30
(B) 60
(C) 45
(D) 75

Answer: (C) 45 · Official TGCHE final key

Q104 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A small bar magnet experiences a torque of 0.016 Nm when placed with its axis at 30° with an external field of 0.04 T. If the bar magnet is replaced by a solenoid of cross-sectional area of 1 cm^2 and 1000 turns but having the same magnetic moment as that of bar magnet, then the current flowing through the solenoid is

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

Answer: (D) 8 A · Official TGCHE final key

Q105 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

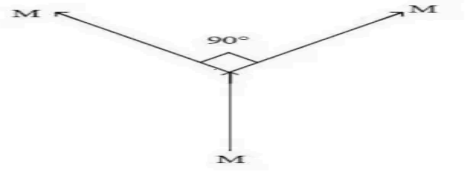
The resultant magnetic moment of three magnetic dipoles, each of magnetic moment 'M' shown in the arrangement is

(see the figure above)

Question Number : 112 Question Id : 1874634752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resultant magnetic moment of three magnetic dipoles, each of magnetic moment 'M' shown in the arrangement is

అమరికలో చూపబడిన ఒక్కొక్కటి 'M' అయస్కాంత భ్రామకం గల మూడు అయస్కాంత ద్విధ్రువాల ఫలిత అయస్కాంత భ్రామకం



Options :
1. $\sqrt{2}$ M
2. $(\sqrt{2}+1)$ M
3. $(\sqrt{2}-1)$ M
4. M

(A) $\sqrt{2}\,M$
(B) $(\sqrt{2}+1)\,M$
(C) $(\sqrt{2}-1)\,M$
(D) M

Answer: (B) $(\sqrt{2}+1)\,M$ · Official APSCHE final key

Q106 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

Two short bar magnets A and B are arranged coaxially. The distance between their centres is $30\ \text{cm}$. A compass needle placed on their axis at a distance of $6\ \text{cm}$ from B shows no deflection. The ratio of the magnetic moments of A and B is

(A) 16:1
(B) 1:16
(C) 64:1
(D) 1:64

Answer: (C) 64:1 · Official APSCHE final key

Q107 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

A bar magnet placed in a uniform magnetic field making an angle θ with the field experiences a torque. If the angle made by the magnet with the field is doubled, the torque experienced by the magnet increases by 41.4%. The initial angle made by the magnet with the magnetic field is

(A) 60°
(B) 30°
(C) 90°
(D) 45°

Answer: (D) 45° · Official APSCHE final key

Q108 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The magnetic susceptibility of a paramagnetic substance at $-173\ ^\circ\text{C}$ is 1.5×10^{-2}. To have the susceptibility 0.5×10^{-2}, the change in temperature in $^\circ\text{C}$ is

(A) 100
(B) 180
(C) 200
(D) 220

Answer: (C) 200 · Official APSCHE final key

Q109 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A metal rod is subjected to cycles of magnetisation at the rate of 42 Hz. Density of the metal is $6 \times 10^3\ \mathrm{kgm^{-3}}$ and its specific heat capacity is $0.1 \times 10^{-3}\ \mathrm{cal\,kg^{-1}\,^\circ C^{-1}}$. If the area of its B-H loop corresponds to energy density of $10^{-2}\ \mathrm{Jm^{-3}}$, then the rise in its temperature in one minute is

(A) $5\,^\circ\mathrm{C}$
(B) $10\,^\circ\mathrm{C}$
(C) $15\,^\circ\mathrm{C}$
(D) $20\,^\circ\mathrm{C}$

Answer: (B) $10\,^\circ\mathrm{C}$ · Official APSCHE final key

Q110 TS EAMCET 2018 · 5 May · Shift 1 MCQ

At a location, the horizontal component of the Earth's magnetic field is 0.3 G in the magnetic meridian and the dip angle is 60°. The earth's magnetic field at this location in G is

(A) 0.3
(B) 0.6
(C) 0.9
(D) 1.2

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

Q111 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A magnetic dipole is under the influence of two orthogonal magnetic fields, $B_1 = 0.5 \times 10^{-3}\ T$ and $B_2 = 0.866 \times 10^{-3}\ T$. If the dipole comes to stable equilibrium at an angle θ with respect to B_2 field, the value of θ is

(A) 45°
(B) 30°
(C) 60°
(D) 90°

Answer: (B) 30° · The council's preliminary key

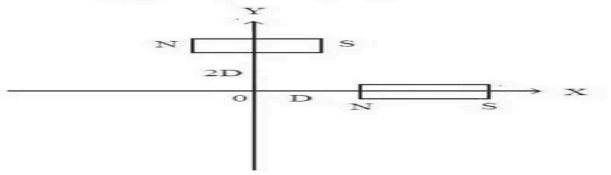
Q112 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A bar magnet of magnetic moment M is placed at a distance D with its axis along positive X-axis. Likewise, second bar magnet of magnetic moment M is placed at a distance $2D$ on positive Y-axis and perpendicular to it as shown in the figure. The magnitude of magnetic field at the origin is $|\vec{B}| = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{D^3}\right]$. The value of α must be
(Assume $D \gg l$ where l is the length of magnets)
(see the figure above)

Question Number : 111 Question Id : 4928631711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

A bar magnet of magnetic moment M is placed at a distance D with its axis along positive X-axis. Likewise, second bar magnet of magnetic moment M is placed at a distance $2D$ on positive Y-axis and perpendicular to it as shown in the figure. The magnitude of magnetic field at the origin is $|\bar{B}| = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{D^3}\right]$. The value of α must be
(Assume $D >> l$ where l is the length of magnets)

M అయస్కాంత భ్రామకము గల ఒక దండాయస్కాంతాన్ని దని X-అక్షం వెంబడి D దూరంలో దాని అక్షము X-దిశకి సమాంతరంగా ఉంచినట్లు ఉంచారు. ఇదేవిధంగా M అయస్కాంత భ్రామకము గల రెండో దండాయస్కాంతాన్ని $2D$ దూరంలో దని Y-అక్షానికి దని అక్షాన్ని లంబంగా పటంలో చూపిన విధంగా ఉంచారు. అయస్కాంత క్షేత్ర పరిమాణం మూలబిందువు వద్ద $|\bar{B}| = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{D^3}\right]$ అగునట్లు కావలసిన α విలువ
($D >> l$ అనుకొనుము. దండా అయస్కాంతంల పొడవు l)



Options :
1. 2
2. $\frac{15}{8}$
3. $\frac{17}{8}$
4. $\frac{9}{8}$

(A) 2
(B) $\frac{15}{8}$
(C) $\frac{17}{8}$
(D) $\frac{9}{8}$

Answer: (B) $\frac{15}{8}$ · The council's preliminary key

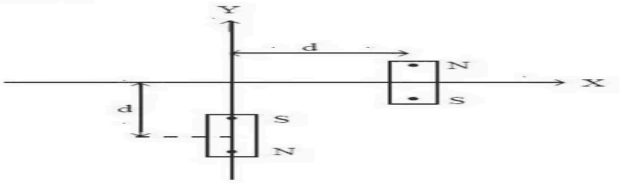
Q113 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Two identical bar magnets of magnetic moment M each, are placed along X and Y axis respectively at a distance d from the origin (as shown in the figure). The origin lies on perpendicular bisector of magnet placed on X-axis and on the magnetic axis of magnet placed on Y-axis. If the magnitude of total magnetic field at the origin is $B = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{d^3}\right]$, the value of constant α will be :
($d \gg l$, where l is the length of the bar magnets and direction of N to S in magnets is opposite with respect to each other)
(see the figure above)

Question Number : 111 Question Id : 4928631871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Two identical bar magnets of magnetic moment M each, are placed along X and Y axis respectively at a distance d from the origin (as shown in the figure). The origin lies on perpendicular bisector of magnet placed on X-axis and on the magnetic axis of magnet placed on Y-axis. If the magnitude of total magnetic field at the origin is $B = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{d^3}\right]$, the value of constant α will be :
($d >> l$, where l is the length of the bar magnets and direction of N to S in magnets is opposite with respect to each other)

ఒక్కొక్కటి అయస్కాంత ద్రామకం M గల రెండు సర్వసమానమైన దండాయస్కాంతాలను పటంలో చూపిన విధంగా X మరియు Y అక్షాల వెంబడి మూలబిందువు నుండి d దూరంలో ఉంచినారు. మూలబిందువు X అక్షంపై ఉంచిన అయస్కాంత లంబసమద్విఖండన రేఖపై మరియు Y అక్షముపై ఉంచిన అయస్కాంత అక్షముపై ఉంటుంది. మూలబిందువు వద్ద మొత్తము అయస్కాంత క్షేత్ర పరిమాణము $B = \alpha\left[\frac{\mu_0}{4\pi}\frac{M}{d^3}\right]$ అయితే, స్థిరాంక α విలువ
($d >> l$, ఇచ్చట l అనేది దండాయస్కాంతాల పొడవు మరియు అయస్కాంతపు N నుండి S దిశలు ఒకదానికొకటి వ్యతిరేకంగా ఉంటాయి)



Options :
1. 2
2. 1
3. 3
4. $\sqrt{5}$

(A) 2
(B) 1
(C) 3
(D) $\sqrt{5}$

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

Q114 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

In the magnetic meridian of a certain place, the vertical component of the earth's magnetic field is 0.3464 G and the dip angle is 30°. The horizontal component of the earth's magnetic field at this location is _____

(A) 0.4 G
(B) 0.6 G
(C) 0.7 G
(D) 0.8 G

Answer: (B) 0.6 G · The council's preliminary key

Q115 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

A short magnet oscillates with a frequency 10 Hz where horizontal component of Earth's magnetic field is 12 μT. A downward current of 15 A is established in a vertical wire placed 20 cm west of the magnet. The new frequency of the magnet is _____

(A) $4\ \text{Hz}$
(B) $2.5\ \text{Hz}$
(C) $9\ \text{Hz}$
(D) $5\ \text{Hz}$

Answer: (D) $5\ \text{Hz}$ · The council's preliminary key

Q116 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

At a certain place, the horizontal component of earth's magnetic field is $\frac{1}{\sqrt{3}}$ times the vertical component. The angle of dip at that place is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (C) 60° · The council's preliminary key

Q117 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A sample of a paramagnetic salt containing 3×10^{24} atomic dipoles each of dipole moment $2 \times 10^{-23}\ \text{Am}^2$ is subjected to a uniform magnetic field of 880 mT and cooled to a temperature of 3.5 K. The degree of magnetic saturation achieved is 10%. If the sample is subjected to a magnetic field of 990 mT and cooled to a temperature of 2.1 K, the total dipole moment of the sample is

(A) $11.25\ \text{Am}^2$
(B) $23.5\ \text{Am}^2$
(C) $15\ \text{Am}^2$
(D) $75\ \text{Am}^2$

Answer: (A) $11.25\ \text{Am}^2$ · The council's preliminary key

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Q118 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Two short bar magnets each of magnetic moment $9\ \text{Am}^2$ are placed such that one is at $x = -3\ \text{cm}$ and the other at $y = -3\ \text{cm}$. If their magnetic moments are directed along positive and negative X-directions respectively then the resultant magnetic field at the origin is

(A) $100\ \text{T}$
(B) $10\ \text{T}$
(C) $0.1\ \text{T}$
(D) $0.001\ \text{T}$

Answer: (C) $0.1\ \text{T}$ · The council's preliminary key

EdLoop EAPCET

Q119 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A short bar magnet of magnetic moment $0.21\ \mathrm{Am}^2$ is placed with its axis perpendicular to the direction of the horizontal component of the Earth's magnetic field. The distance of the point on the axis of the magnet from the centre of the magnet where the resultant magnetic field is inclined at 45° with the horizontal component of the Earth's field direction is _____ (Horizontal component of the Earth's magnetic field $= 4.2 \times 10^{-5}\ \mathrm{T}$)

(A) $12\ \mathrm{cm}$
(B) $20\ \mathrm{cm}$
(C) $5\ \mathrm{cm}$
(D) $10\ \mathrm{cm}$

Answer: (D) $10\ \mathrm{cm}$ · The council's preliminary key

Q120 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Match the following
List - I
a) High Retentivity
b) High resistivity
c) Low coercivity
d) Negative susceptibility
List - II
i) Telephone diaphram
ii) Diamagnet
iii) To decrease eddy current losses
iv) Permanent magnet
The correct answer is

(A) a-i, b-ii, c-iii, d-iv
(B) a-iv, b-iii, c-i, d-ii
(C) a-i, b-iv, c-iii, d-ii
(D) a-iv, b-ii, c-i, d-iii

Answer: (B) a-iv, b-iii, c-i, d-ii · The council's preliminary key

Q121 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

Two short bar magnets of moments 'M' and '$\sqrt{3}M$' are joined like a cross (+). This cross is suspended from its centre with its plane horizontal in the earth's magnetic field. When the cross comes to equilibrium, angle made by the weaker magnet with the earth's magnetic field B_H is

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(A) 30°
(B) 45°
(C) 75°
(D) 60°

Answer: (D) 60° · The council's preliminary key

Q122 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The energy dissipated per unit volume per cycle in the hysteresis of an iron sample of mass 10 kg is $200\ \mathrm{J m^{-3}\ cycle^{-1}}$. The density of iron is $7500\ \mathrm{kg\,m^{-3}}$. The loss of energy per hour at $50\ \mathrm{cycle\,s^{-1}}$ is

(A) 24000 J
(B) 48000 J
(C) 96000 J
(D) 12000 J

Answer: (B) 48000 J · The council's preliminary key

Q123 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

Assertion (A): Electromagnets are made of soft iron
Reason (R): Coercivity is small for soft iron

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(C) (A) is true, but (R) is not true
(D) (A) is not true, but (R) is true

Answer: (A) Both (A) and (R) are true and (R) is the correct explanation of (A) · The council's preliminary key

Q124 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

A magnetic needle is free to rotate in a vertical plane which makes an angle of 60° with the magnetic meridian. If the needle stays in a direction making an angle of $\tan^{-1}\left(\frac{2}{\sqrt{3}}\right)$ with horizontal, true dip value at that place is

(A) 60°
(B) 30°
(C) 45°
(D) 37°

Answer: (B) 30° · The council's preliminary key

Q125 TS EAMCET 2016 · 15 May · Offline MCQ

Two small magnets have their masses and lengths in the ratio 1 : 2. The maximum torques experienced by them in a uniform magnetic field are the same. For small oscillations, the ratio of their

time periods is

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

Answer: (A) $\frac{1}{2\sqrt{2}}$ · Official TGCHE final key

Q126 AP EAMCET 2016 · 29 Apr · Offline MCQ

A magnetic dipole of moment $2.5\ \mathrm{Am}^2$ is free to rotate about a vertical axis passing through its centre. It is released from East-West direction. Its kinetic energy at the moment it takes North-South position is ($B_H = 3 \times 10^{-5}$ T).

(A) 50 μJ
(B) 100 μJ
(C) 175 μJ
(D) 75 μJ

Answer: (D) 75 μJ · The council's preliminary key

Q127 AP EAMCET 2014 · 22 May · Offline MCQ

At a certain place, the angle of dip is 60° and the horizontal component of earth's magnetic field (B_H) is 0.8×10^{-4} T. The earth's overall magnetic field is

(A) 1.5×10^{-4} T
(B) 1.6×10^{-3} T
(C) 1.5×10^{-3} T
(D) 1.6×10^{-4} T

Answer: (D) 1.6×10^{-4} T · The council's preliminary key

Q128 AP EAMCET 2013 · 10 May · Offline MCQ

A short bar magnet having magnetic moment $4\ \mathrm{Am}^2$, placed in a vibrating magnetometer, vibrates with a time period of 8 seconds. Another short bar magnet having a magnetic moment $8\ \mathrm{Am}^2$ vibrates with a time period of 6 seconds. If the moment of inertia of the second magnet is $9 \times 10^{-2}\ \mathrm{kg\,m}^2$, the moment of inertia of the first magnet is (Assume that both magnets are kept in the same uniform magnetic induction field.)

(A) $9 \times 10^{-2}\ \mathrm{kg\,m^2}$
(B) $8 \times 10^{-2}\ \mathrm{kg\,m^2}$
(C) $5.33 \times 10^{-2}\ \mathrm{kg\,m^2}$
(D) $12.2 \times 10^{-2}\ \mathrm{kg\,m^2}$

Answer: (B) $8 \times 10^{-2}\ \mathrm{kg\,m^2}$ · The council's preliminary key

Q129 AP EAMCET 2013 · 10 May · Offline MCQ

Two short bar magnets have their magnetic moments $1.2\ \mathrm{Am^2}$ and $1.0\ \mathrm{Am^2}$. They are placed on a horizontal table parallel to each other at a distance of 20 cm between their centres, such that their north poles pointing towards geographic south. They have common magnetic equatorial line. Horizontal component of earth's field is 3.6×10^{-5} T. Then, the resultant horizontal magnetic induction at mid point of the line joining their centers is $\left(\frac{\mu_0}{4\pi} = 10^{-7}\ \mathrm{H/m}\right)$

(A) 3.6×10^{-5} T
(B) 1.84×10^{-4} T
(C) 2.56×10^{-4} T
(D) 5.8×10^{-5} T

Answer: (C) 2.56×10^{-4} T · The council's preliminary key

Q130 AP EAMCET 2013 · 10 May · Offline MCQ

A deflection magnetometer is adjusted and a magnet of magnetic moment M is placed on it in the usual manner and the observed deflection is θ. The period of oscillation of the needle before settling to the deflection is T. When the magnet is removed, the period of oscillation of the needle is T_0 before settling to 0°-0°. If the earth's induced magnetic field is B_H, the relation between T and T_0 is

(A) $T^2 = T_0^2 \cos\theta$
(B) $T^2 = \dfrac{T_0^2}{\cos\theta}$
(C) $T = T_0 \cos\theta$
(D) $T = \dfrac{T_0}{\cos\theta}$

Answer: (A) $T^2 = T_0^2 \cos\theta$ · The council's preliminary key

Q131 AP EAMCET 2012 · 12 May · Offline MCQ

A short bar magnet in a vibrating magnetometer makes 16 oscillations in 4 seconds. Another short magnet with same length and width having moment of inertia 1.5 times the first one is placed over the first magnet and oscillated. Neglecting the induced magnetization, the time period of the combination is

(A) $2\sqrt{10}$ s
(B) $20\sqrt{10}$ s
(C) $\frac{2}{\sqrt{10}}$ s
(D) $\frac{2.5}{\sqrt{10}}$ s

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Q132 AP EAMCET 2012 · 12 May · Offline MCQ

A magnetic needle lying parallel to a magnetic field is turned through 60°. The work done on it is w. The torque required to maintain the magnetic needle in the position mentioned above is

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

Answer: (A) $\sqrt{3}$ w · Official APSCHE final key

Q133 AP EAMCET 2011 · 8 May · Offline MCQ

If a bar magnet of pole strength m and magnetic moment M is cut equally 5 times parallel to its axis and again 3 times perpendicular to its axis, then the pole strength and magnetic moment of each piece are respectively :

(A) $\frac{m}{20}, \frac{M}{4}$
(B) $\frac{m}{5}, \frac{M}{20}$
(C) $\frac{m}{6}, \frac{M}{24}$
(D) $\frac{m}{5}, \frac{M}{24}$

Answer: (C) $\frac{m}{6}, \frac{M}{24}$ · The council's preliminary key

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Q134 AP EAMCET 2010 · 30 May · Offline MCQ

The frequency of vibration in a vibration magnetometer of the combination of two bar magnets of magnetic moments M_1 and M_2 is 6 Hz when like poles are tied and it is 2 Hz when the unlike poles are tied together, then the ratio $M_1 : M_2$ is :

(A) 4 : 5
(B) 5 : 4
(C) 1 : 3
(D) 3 : 1

Answer: (B) 5 : 4 · Official APSCHE final key

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Q135 AP EAMCET 2010 · 30 May · Offline MCQ

A short magnetic needle is pivoted in a uniform magnetic field of induction 1T. Now, simultaneously another magnetic field of induction $\sqrt{3}\,\mathrm{T}$ is applied at right angles to the first field; the needle deflects through an angle 'θ' whose value is :

(A) 30°
(B) 45°
(C) 90°
(D) 60°

Answer: (D) 60° · Official APSCHE final key

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