Magnetism

Instructions

This document contains 100 multiple-choice questions on Magnetism and Matter and moving charges and magnetism, designed for NEET/EAMCET preparation. Each question has four options (a, b, c, d), with one correct answer. The answer key is provided at the end of the document.

Set 1: Questions 1–20

1. Which of the following statements is true for a diamagnetic material?

   a) It is attracted to a magnet.

   b) It has a positive magnetic susceptibility.

   c) It has no unpaired electrons.

   d) It loses its magnetism at high temperatures.

2. The magnetic field lines due to a bar magnet:

   a) Are closed loops.

   b) Start from the north pole and end at the south pole.

   c) Start from the south pole and end at the north pole.

   d) Are straight lines.

3. A bar magnet has a magnetic moment of $10\,\text{A m}^2$. It is placed in a magnetic field of $0.5\,\text{T}$ such that the angle between the magnetic moment and the field is $30°$. The torque experienced by the magnet is:

   a) $2.5\,\text{N m}$

   b) $2.5\,\text{A m}^2\text{T}$

   c) $2.5\,\text{J}$

   d) $0\,\text{N m}$

4. The magnetic susceptibility of a paramagnetic material is:

   a) Small and positive

   b) Large and positive

   c) Negative

   d) Zero

5. In a ferromagnetic material, the magnetic domains are:

   a) Randomly oriented in the absence of an external magnetic field.

   b) Aligned in the direction of the external magnetic field.

   c) Permanently aligned even in the absence of an external magnetic field.

   d) Oriented perpendicular to the external magnetic field.

6. The angle of dip at a place is $60°$. The horizontal component of the earth's magnetic field is $0.2\,\text{G}$. The total magnetic field strength at that place is:

   a) $0.4\,\text{G}$

b) 0.2 G

c) 0.346 G

d) 0.1 G

7. The magnetic field strength H inside a long solenoid carrying current I with n turns per unit length is:

   a) nI

   b) $\mu_0 nI$

   c) B, where B is the magnetic flux density

   d) B/μ_0, where B is the magnetic flux density inside the solenoid

8. In the hysteresis curve for a ferromagnetic material, the area of the loop represents:

   a) The energy dissipated per unit volume per cycle.

   b) The magnetic susceptibility.

   c) The coercivity.

   d) The retentivity.

9. Which of the following is a characteristic of a soft magnetic material?

   a) High coercivity

   b) Low permeability

   c) High retentivity

   d) Low hysteresis loss

10. The magnetic field due to a magnetic dipole at a point along its axial line is:

    a) $\frac{\mu_0}{4\pi} \cdot \frac{2m}{r^3}$

    b) $\frac{\mu_0}{4\pi} \cdot \frac{m}{r^2}$

    c) $\frac{\mu_0}{4\pi} \cdot \frac{m}{r^3}$

    d) $\frac{\mu_0}{4\pi} \cdot \frac{m}{r}$

11. The declination at a place is the angle between:

    a) The vertical component and the total magnetic field

    b) The horizontal component and the geographic north-south direction

    c) The total magnetic field and the geographic north-south direction

    d) The horizontal component and the magnetic meridian

12. A bar magnet with magnetic moment $5\,\text{A m}^2$ is placed in a magnetic field of 0.2 T at an angle of 60° between the magnetic moment and the field. The potential energy of the magnet is:

    a) $-1\,\text{J}$

    b) $-0.5\,\text{J}$

    c) $-0.866\,\text{J}$

    d) $-1.2\,\text{J}$

13. The relative permeability of a material is 0.99. The material is:

    a) Diamagnetic

    b) Paramagnetic

    c) Ferromagnetic

    d) Ferrimagnetic

14. Curie's law states that for a paramagnetic material, the magnetic susceptibility is:

    a) Directly proportional to temperature

    b) Inversely proportional to temperature

    c) Independent of temperature

    d) Proportional to the square of temperature

15. The magnetic flux density B in a material is related to the magnetic field strength H by:

    a) $B = H$

    b) $B = \mu_0 H$

c) $B = \mu H$, where μ is the permeability of the material

d) $B = H/\mu_0$

16. The SI unit of magnetic moment is:

a) Ampere meter^2

b) Newton meter

c) Tesla meter

d) Weber

17. Which of the following is not a ferromagnetic material?

a) Iron

b) Cobalt

c) Nickel

d) Aluminium

18. The Earth's magnetic field is approximately that of a bar magnet placed at the center of the Earth with its north pole towards the geographic:

a) North pole

b) South pole

c) East

d) West

19. The magnetic moment of an atom is due to:

a) Only the spin of electrons

b) Only the orbital motion of electrons

c) Both spin and orbital motion of electrons

d) The motion of protons in the nucleus

20. In a paramagnetic material, the magnetic dipoles:

a) Are permanently aligned

b) Align with the external magnetic field

c) Are randomly oriented

d) Oppose the external magnetic field

Set 2: Questions 21–40

21. A magnetic needle oscillates in the Earth's horizontal magnetic field with a time period of 2 s. If the horizontal component of the Earth's magnetic field is 0.3×10^{-4} T, the moment of inertia of the needle is 5×10^{-6} kg m^2. The magnetic moment of the needle is:

a) 0.0296 A m^2

b) 0.0592 A m^2

c) 0.0148 A m^2

d) 0.1184 A m^2

22. Which property distinguishes a ferromagnetic material from a paramagnetic material?

a) High susceptibility

b) Permanent magnetization after removal of external field

c) Negative susceptibility

d) Alignment opposite to the external field

23. A short bar magnet produces a magnetic field of 0.1 T at a point 10 cm along its axial line. The magnetic moment of the magnet is:

a) 0.5 A m^2

b) 0.25 A m^2

c) 1.0 A m^2

d) 0.125 A m^2

24. The magnetic susceptibility of a material becomes zero when:

a) It is diamagnetic

b) It is ferromagnetic at Curie temperature

c) It is paramagnetic at absolute zero

d) It is placed in a vacuum

25. A solenoid of length 0.5 m has 500 turns and carries a current of 2 A. The magnetic field inside the solenoid is:

a) 4×10^{-3} T

b) 2.51×10^{-3} T

c) 5×10^{-3} T

d) 1.26×10^{-3} T

26. The coercivity of a material indicates:

a) The ability to retain magnetism

b) The field required to reduce magnetization to zero

c) The maximum magnetic field it can withstand

d) The susceptibility of the material

27. A magnetic dipole of moment 2 A m^2 is placed perpendicular to a uniform magnetic field of 0.4 T. The work done to rotate it to align with the field is:

a) 0.8 J

b) 1.6 J

c) 0.4 J

d) 0 J

28. At the magnetic equator, the angle of dip is:

a) 90°

b) 45°

c) 0°

d) 60°

29. A bar magnet is cut into two equal halves perpendicular to its length. The magnetic moment of each half becomes:

a) Half of the original

b) Same as the original

c) Double the original

d) Zero

30. A current loop of area 0.01 m^2 carrying 5 A is placed in a magnetic field of 2 T such that the plane of the loop is perpendicular to the field. The torque on the loop is:

a) 0.1 N m

b) 0.05 N m

c) 0.2 N m

d) 0 N m

31. The magnetization of a material is defined as:

a) Magnetic moment per unit volume

b) Magnetic field strength per unit area

c) Magnetic flux density

d) Magnetic susceptibility per unit volume

32. A proton moves with a velocity of 2×10^6 m/s perpendicular to a magnetic field of 0.5 T. The magnetic force on the proton is:

a) 1.6×10^{-13} N

b) 3.2×10^{-13} N

c) 1.6×10^{-14} N

d) 8×10^{-13} N

33. The relative permeability of a ferromagnetic material is:

a) Slightly greater than 1

b) Much greater than 1

c) Less than 1

d) Equal to 1

34. Two identical bar magnets are placed end-to-end with like poles together. The resultant magnetic moment of the system is:

a) Zero

b) Equal to one magnet

c) Double that of one magnet

d) Half that of one magnet

35. The vertical component of the Earth's magnetic field at a place is $0.4 \times 10^{-4}\,\text{T}$, and the angle of dip is 30°. The total magnetic field is:

a) $0.8 \times 10^{-4}\,\text{T}$

b) $0.462 \times 10^{-4}\,\text{T}$

c) $0.4 \times 10^{-4}\,\text{T}$

d) $0.346 \times 10^{-4}\,\text{T}$

36. The retentivity of a material refers to:

a) The maximum magnetization achieved

b) The residual magnetism after removing the field

c) The field required to demagnetize it

d) The susceptibility at saturation

37. A magnetic dipole experiences a torque of $0.2\,\text{N m}$ in a field of $0.5\,\text{T}$ when placed at 90° to the field. Its magnetic moment is:

a) $0.4\,\text{A m}^2$

b) $0.2\,\text{A m}^2$

c) $0.1\,\text{A m}^2$

d) $0.8\,\text{A m}^2$

38. Which of the following materials exhibits hysteresis?

a) Diamagnetic

b) Paramagnetic

c) Ferromagnetic

d) All of the above

39. A circular coil of radius $0.05\,\text{m}$ with 100 turns carries a current of $1\,\text{A}$. The magnetic moment of the coil is:

a) $0.785\,\text{A m}^2$

b) $1.57\,\text{A m}^2$

c) $0.392\,\text{A m}^2$

d) $3.14\,\text{A m}^2$

40. The magnetic field at a point on the equatorial line of a bar magnet is $2 \times 10^{-5}\,\text{T}$. If the magnet's magnetic moment is $0.1\,\text{A m}^2$, the distance of the point from the magnet is:

a) $0.1\,\text{m}$

b) $0.171\,\text{m}$

c) $0.05\,\text{m}$

d) $0.2\,\text{m}$

Set 3: Questions 41–60

41. A magnetic needle in a uniform magnetic field of $0.2\,\text{T}$ oscillates with a time period of $1\,\text{s}$. If its moment of inertia is $2 \times 10^{-5}\,\text{kg m}^2$, the magnetic moment of the needle is:

a) $0.0789\,\text{A m}^2$

b) $0.0395\,\text{A m}^2$

c) $0.1578\,\text{A m}^2$

d) $0.0197\,\text{A m}^2$

42. The magnetic field at a point due to a short bar magnet is $4 \times 10^{-6}\,\text{T}$ along its equatorial line at a distance of $0.2\,\text{m}$. The magnetic moment of the magnet is:

a) $0.064\,\text{A m}^2$

b) $0.032\,\text{A m}^2$

c) $0.128\,\text{A m}^2$

d) $0.016\,\text{A m}^2$

43. Which of the following is true about the magnetization of a paramagnetic material?

a) It decreases with increasing temperature

b) It increases with decreasing magnetic field

c) It is independent of temperature

d) It becomes zero at Curie temperature

44. A bar magnet of magnetic moment $8\,\text{A m}^2$ is placed in a magnetic field of $0.25\,\text{T}$ at an angle of 45°. The torque acting on it is:

a) $1.414\,\text{N m}$

b) $2\,\text{N m}$

c) $1\,\text{N m}$

d) $2.828\,\text{N m}$

45. The susceptibility of a diamagnetic material is:

a) Small and positive

b) Large and positive

c) Small and negative

d) Zero

46. A solenoid with 200 turns per meter carries a current of $3\,\text{A}$. The magnetic field strength (H) inside the solenoid is:

a) $600\,\text{A/m}$

b) $300\,\text{A/m}$

c) $900\,\text{A/m}$

d) $1200\,\text{A/m}$

47. The potential energy of a magnetic dipole of $4\,\text{A m}^2$ aligned at 60° with a magnetic field of $0.5\,\text{T}$ is:

a) $-1\,\text{J}$

b) $-2\,\text{J}$

c) $-1.732\,\text{J}$

d) $-0.866\,\text{J}$

48. The angle of dip at the magnetic poles is:

a) 0°

b) 45°

c) 90°

d) 30°

49. A circular coil of 50 turns and radius $0.02\,\text{m}$ carries a current of $2\,\text{A}$. The magnetic field at the center of the coil is:

a) $3.14 \times 10^{-3}\,\text{T}$

b) $6.28 \times 10^{-3}\,\text{T}$

c) $1.57 \times 10^{-3}\,\text{T}$

d) $12.56 \times 10^{-3}\,\text{T}$

50. The primary source of the Earth's magnetic field is believed to be:

a) Permanent magnets in the crust

b) Electric currents in the molten outer core

c) Solar wind interactions

d) Rotation of the Earth's solid core

51. A bar magnet of length $0.1\,\text{m}$ has a pole strength of $20\,\text{A m}$. Its magnetic moment is:

a) $2\,\text{A m}^2$

b) $1\,\text{A m}^2$

c) $4\,\text{A m}^2$

d) $0.5\,\text{A m}^2$

52. The hysteresis loss in a ferromagnetic material depends on:

a) The frequency of the applied field

b) The coercivity only

c) The susceptibility only

d) The temperature only

53. A magnetic dipole of moment $3\,\text{A m}^2$ is rotated from parallel to perpendicular orientation in a field of $0.6\,\text{T}$. The work done is:

a) $1.8\,\text{J}$

b) $0.9\,\text{J}$

c) $3.6\,\text{J}$

d) $0\,\text{J}$

54. The magnetic field inside a material with relative permeability 1000 and magnetic field strength 500 A/m is:

    a) 0.628 T

    b) 0.314 T

    c) 0.157 T

    d) 0.942 T

55. The magnetic moment of an electron orbiting in a circular path of radius 5.29×10^{-11} m with a speed of 2.19×10^{6} m/s is:

    a) 9.27×10^{-24} A m^2

    b) 4.64×10^{-24} A m^2

    c) 1.85×10^{-23} A m^2

    d) 2.32×10^{-24} A m^2

56. In a hysteresis loop, the point where the magnetization becomes zero is called:

    a) Retentivity

    b) Coercivity

    c) Saturation

    d) Susceptibility

57. A square loop of side 0.1 m carrying 4 A is placed in a magnetic field of 0.8 T perpendicular to its plane. The torque on the loop is:

    a) 0.032 N m

    b) 0.064 N m

    c) 0.016 N m

    d) 0.128 N m

58. The magnetic field at a point 0.1 m along the axial line of a bar magnet is twice that at a point on its equatorial line at the same distance. The magnetic field on the equatorial line is 1×10^{-5} T. The magnet's magnetic moment is:

    a) 0.02 A m^2

    b) 0.01 A m^2

    c) 0.04 A m^2

    d) 0.005 A m^2

59. Which of the following phenomena is evidence of Earth's magnetic field reversals?

    a) Variation in declination

    b) Magnetization of oceanic crust rocks

    c) Changes in dip angle

    d) Increase in hysteresis loss

60. A magnetic needle is placed in a field where $B_H = 0.4 \times 10^{-4}$ T and $B_V = 0.3 \times 10^{-4}$ T. The angle of dip is:

    a) 36.87°

    b) 53.13°

    c) 45°

    d) 60°

Set 4: Questions 61–80

61. A magnetic needle oscillates with a time period of 4 s in Earth's horizontal magnetic field of 0.25×10^{-4} T. If its moment of inertia is 8×10^{-5} kg m^2, the magnetic moment of the needle is:

    a) 0.0197 A m^2

    b) 0.0395 A m^2

    c) 0.0790 A m^2

    d) 0.0099 A m^2

62. The magnetic field at a point 0.05 m along the axial line of a bar magnet is 8×10^{-5} T. The magnetic moment of the magnet is:

    a) 0.01 A m^2

    b) 0.005 A m^2

    c) 0.02 A m^2

    d) 0.0025 A m^2

63. The Curie temperature of a ferromagnetic material is the temperature above which it becomes:

    a) Diamagnetic

    b) Paramagnetic

    c) Non-magnetic

    d) Ferromagnetic

64. A magnetic dipole of moment $6\,\text{A m}^2$ is placed in a magnetic field of $0.3\,\text{T}$ at an angle of $30°$. The torque experienced by the dipole is:

    a) $0.9\,\text{N m}$

    b) $1.8\,\text{N m}$

    c) $0.45\,\text{N m}$

    d) $1.2\,\text{N m}$

65. The magnetic susceptibility of a ferromagnetic material is:

    a) Small and positive

    b) Very large and positive

    c) Small and negative

    d) Zero

66. A solenoid of length $1\,\text{m}$ has 1000 turns and carries a current of $1.5\,\text{A}$. The magnetic flux density inside the solenoid is:

    a) $1.885 \times 10^{-3}\,\text{T}$

    b) $3.77 \times 10^{-3}\,\text{T}$

    c) $0.942 \times 10^{-3}\,\text{T}$

    d) $2.51 \times 10^{-3}\,\text{T}$

67. The potential energy of a magnetic dipole of $5\,\text{A m}^2$ placed perpendicular to a magnetic field of $0.4\,\text{T}$ is:

    a) $0\,\text{J}$

    b) $-2\,\text{J}$

    c) $2\,\text{J}$

    d) $-1\,\text{J}$

68. The horizontal component of the Earth's magnetic field at a place is $0.36 \times 10^{-4}\,\text{T}$, and the total field is $0.6 \times 10^{-4}\,\text{T}$. The angle of dip is:

    a) $36.87°$

    b) $53.13°$

    c) $45°$

    d) $60°$

69. A circular coil of radius $0.1\,\text{m}$ with 20 turns carries a current of $3\,\text{A}$. The magnetic moment of the coil is:

    a) $1.885\,\text{A m}^2$

    b) $0.942\,\text{A m}^2$

    c) $3.77\,\text{A m}^2$

    d) $0.628\,\text{A m}^2$

70. The primary reason paramagnetic materials are weakly attracted to magnetic fields is:

    a) Presence of permanent dipoles

    b) Alignment of atomic dipoles with the field

    c) Opposition of atomic dipoles to the field

    d) High retentivity

71. A bar magnet produces a magnetic field of $1 \times 10^{-4}\,\text{T}$ at a point $0.2\,\text{m}$ on its equatorial line. The magnetic moment of the magnet is:

    a) $0.08\,\text{A m}^2$

    b) $0.04\,\text{A m}^2$

    c) $0.16\,\text{A m}^2$

    d) $0.02\,\text{A m}^2$

72. The coercivity of a soft iron sample is typically:

    a) High

    b) Low

    c) Zero

    d) Equal to its retentivity

73. A magnetic dipole of moment $10\,\text{A m}^2$ is rotated from 0° to 60° in a field of $0.5\,\text{T}$. The work done is:

    a) $2.5\,\text{J}$

    b) $5\,\text{J}$

    c) $1.25\,\text{J}$

    d) $0\,\text{J}$

74. The magnetic field inside a material with relative permeability 500 and magnetic field strength $200\,\text{A/m}$ is:

    a) $0.1256\,\text{T}$

    b) $0.0628\,\text{T}$

    c) $0.2512\,\text{T}$

    d) $0.0314\,\text{T}$

75. A rectangular loop of area $0.02\,\text{m}^2$ carrying $5\,\text{A}$ is placed in a magnetic field of $1\,\text{T}$ with its plane at 30° to the field. The torque on the loop is:

    a) $0.05\,\text{N m}$

    b) $0.0866\,\text{N m}$

    c) $0.1\,\text{N m}$

    d) $0.0433\,\text{N m}$

76. The retentivity of a ferromagnetic material is highest when:

    a) It is fully magnetized

    b) The external field is removed

    c) The material is demagnetized

    d) The coercivity is zero

77. A proton enters a magnetic field of $0.2\,\text{T}$ with a speed of $5 \times 10^5\,\text{m/s}$ at 60° to the field. The magnetic force on the proton is:

    a) $8 \times 10^{-14}\,\text{N}$

    b) $6.93 \times 10^{-14}\,\text{N}$

    c) $4 \times 10^{-14}\,\text{N}$

    d) $1.6 \times 10^{-13}\,\text{N}$

78. A bar magnet is cut into two equal halves along its length. The magnetic moment of each half is:

    a) Same as the original

    b) Half of the original

    c) Double the original

    d) Zero

79. A coil of 100 turns and radius $0.05\,\text{m}$ carries a current of $2\,\text{A}$. The magnetic field at a point $0.1\,\text{m}$ along its axis is:

    a) $1.256 \times 10^{-4}\,\text{T}$

    b) $6.28 \times 10^{-5}\,\text{T}$

    c) $3.14 \times 10^{-5}\,\text{T}$

    d) $2.51 \times 10^{-4}\,\text{T}$

80. The magnetic field lines inside a bar magnet run:

    a) From north to south

    b) From south to north

    c) In closed loops

    d) Perpendicular to the magnet's axis

Set 5: Questions 81–100

81. A magnetic needle oscillates in a uniform magnetic field of $0.1\,\text{T}$ with a time period of $2\,\text{s}$. If its moment of inertia is $1 \times 10^{-5}\,\text{kg m}^2$, the magnetic moment of the needle is:

    a) $0.00987\,\text{A m}^2$

    b) $0.01974\,\text{A m}^2$

    c) $0.03948\,\text{A m}^2$

    d) $0.00494\,\text{A m}^2$

82. A bar magnet produces a magnetic field of $2 \times 10^{-5}\,\text{T}$ at a point $0.3\,\text{m}$ along its axial line. The magnetic moment of the magnet is:

    a) $0.081\,\text{A m}^2$

    b) $0.162\,\text{A m}^2$

    c) $0.027\,\text{A m}^2$

d) $0.054\,\text{A m}^2$

83. The magnetic susceptibility of a material decreases with temperature in:

a) Diamagnetic materials

b) Paramagnetic materials

c) Ferromagnetic materials below Curie temperature

d) All magnetic materials

84. A magnetic dipole of moment $12\,\text{A m}^2$ is placed at 60° to a magnetic field of $0.2\,\text{T}$. The torque on the dipole is:

a) $2.078\,\text{N m}$

b) $1.2\,\text{N m}$

c) $2.4\,\text{N m}$

d) $1.039\,\text{N m}$

85. The relative permeability of a diamagnetic material is:

a) Slightly less than 1

b) Much greater than 1

c) Exactly 1

d) Slightly greater than 1

86. A solenoid of 400 turns per meter carries a current of $2.5\,\text{A}$. The magnetic field strength inside the solenoid is:

a) $1000\,\text{A/m}$

b) $800\,\text{A/m}$

c) $1200\,\text{A/m}$

d) $600\,\text{A/m}$

87. The potential energy of a magnetic dipole of $8\,\text{A m}^2$ aligned parallel to a magnetic field of $0.25\,\text{T}$ is:

a) $-2\,\text{J}$

b) $0\,\text{J}$

c) $2\,\text{J}$

d) $-1\,\text{J}$

88. The total magnetic field at a place is $0.5 \times 10^{-4}\,\text{T}$, and the vertical component is $0.3 \times 10^{-4}\,\text{T}$. The angle of dip is:

a) 36.87°

b) 53.13°

c) 60°

d) 45°

89. A circular coil of 150 turns and radius $0.03\,\text{m}$ carries a current of $4\,\text{A}$. The magnetic field at the center is:

a) $2.513 \times 10^{-3}\,\text{T}$

b) $5.026 \times 10^{-3}\,\text{T}$

c) $1.257 \times 10^{-3}\,\text{T}$

d) $7.539 \times 10^{-3}\,\text{T}$

90. The hysteresis loop of a ferromagnetic material is wider when:

a) Coercivity is low

b) Retentivity is low

c) Energy loss is high

d) Susceptibility is high

91. A bar magnet of length $0.2\,\text{m}$ has a magnetic moment of $4\,\text{A m}^2$. The pole strength of the magnet is:

a) $20\,\text{A m}$

b) $10\,\text{A m}$

c) $40\,\text{A m}$

d) $5\,\text{A m}$

92. The magnetic field at a point on the equatorial line of a bar magnet is $5 \times 10^{-6}\,\text{T}$ at a distance of $0.4\,\text{m}$. The magnetic moment is:

a) $0.32\,\text{A m}^2$

b) $0.16\,\text{A m}^2$

c) $0.08\,\text{A m}^2$

d) $0.64\,\text{A m}^2$

93. A magnetic dipole of $15\,\text{A m}^2$ is rotated from 30° to 90° in a field of $0.4\,\text{T}$. The work done is:

a) $5.196\,\text{J}$

b) $2.598\,\text{J}$

c) $6\,\text{J}$

d) $3\,\text{J}$

94. The magnetic field inside a material with relative permeability 2000 and magnetic field strength $100\,\text{A/m}$ is:

a) $0.2512\,\text{T}$

b) $0.1256\,\text{T}$

c) $0.5024\,\text{T}$

d) $0.0628\,\text{T}$

95. A square loop of side $0.05\,\text{m}$ carrying $6\,\text{A}$ is placed in a magnetic field of $0.5\,\text{T}$ perpendicular to its plane. The torque is:

a) $0.0075\,\text{N m}$

b) $0.015\,\text{N m}$

c) $0.03\,\text{N m}$

d) $0.06\,\text{N m}$

96. The magnetic moment of a current loop depends on:

a) Current and area only

b) Magnetic field strength

c) Permeability of the medium

d) Temperature of the loop

97. An electron moves at $3 \times 10^6\,\text{m/s}$ perpendicular to a magnetic field of $0.3\,\text{T}$. The magnetic force on the electron is:

a) $1.44 \times 10^{-13}\,\text{N}$

b) $2.88 \times 10^{-13}\,\text{N}$

c) $7.2 \times 10^{-14}\,\text{N}$

d) $4.8 \times 10^{-13}\,\text{N}$

98. The magnetic field at a point $0.2\,\text{m}$ along the axis of a circular coil of 50 turns, radius $0.05\,\text{m}$, and current $2\,\text{A}$ is:

a) $3.14 \times 10^{-5}\,\text{T}$

b) $1.57 \times 10^{-5}\,\text{T}$

c) $6.28 \times 10^{-5}\,\text{T}$

d) $2.51 \times 10^{-5}\,\text{T}$

99. The magnetic field lines of a bar magnet:

a) Originate from the south pole

b) Are denser at the equator

c) Are denser near the poles

d) Do not intersect

100. A ferromagnetic material loses its magnetism completely when heated to:

a) Melting point

b) Curie temperature

c) Absolute zero

d) Critical temperature

Answer Key

1. c	7. a	13. a	19. c	25. b	31. a	37. a	43. a	49. b	55. a
2. a	8. a	14. b	20. b	26. b	32. a	38. c	44. a	50. b	56. b
3. a	9. d	15. c	21. b	27. a	33. b	39. a	45. c	51. a	57. b
4. a	10. a	16. a	22. b	28. c	34. a	40. b	46. a	52. a	58. a
5. a	11. b	17. d	23. a	29. a	35. b	41. b	47. a	53. a	59. b
6. a	12. b	18. b	24. b	30. a	36. b	42. a	48. c	54. a	60. a

61. c	65. b	69. a	73. a	77. b	81. b	85. a	89. b	93. b	97. a
62. a	66. a	70. b	74. c	78. b	82. a	86. a	90. a	94. a	98. a
63. b	67. a	71. a	75. b	79. b	83. b	87. a	91. a	95. b	99. c
64. a	68. b	72. b	76. b	80. b	84. a	88. c	92. a	96. a	100. b