

## MAGNETISM

## Test Paper-I

MAX MARKS: 30

TIME: 90Mts

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	What is gyromagnetic ratio? Give the value of it.	Page:163	1
2	What is Bohr magneton? Find the value of it.	Page:163	2
3	Show that an electron moving around the central nucleus has a magnetic moment $\mu_l$ is given by $\mu_l = e\hbar/2m$ where $\hbar$ is the magnitude of the angular momentum of the circulating electron about the central nucleus.	Page:162	2
4	Fill-in the blanks. . a. The earth behaves as a magnet with the magnetic field pointing from _____ to _____. b. When a bar magnet is freely suspended, it points in the _____ direction. The tip which points to the geographic north is called the _____ pole and the tip which points to the geographic south is called the _____ of the magnet. c. Magnetic _____ poles do not exist.	Page:174	3
5	Give the properties of magnetic field lines.	Page:175	2
6	Give the points basing on which we can consider a bar magnet as equivalent to a solenoid.	Page:176	2
7	Magnetic field lines can be entirely confined within the core of a toroid, but not within a straight solenoid. Why?	Page:184	1
8	If magnetic monopoles existed, how would the Gauss's law of magnetism be modified?	Page:184	1
9	Magnetic field arises due to charges in motion. Can a system have magnetic moments even though its net charge is zero?	Page:184	1
10	What is dynamo effect?	Page:185	1
11	What is the angle made by the axis of earth's magnetic dipole with that of axis of rotation of the earth? Give the locations of earth's magnetic north pole and that of the earth's magnetic south pole. ?	Page:185	2
12	The earth's magnetic field at the equator is approximately 0.4G. Estimate the earth's dipole moment. ?	Page:185	2
13	What are the elements of earth's magnetic field?	Page:187	1
14	Define magnetic declination. What is its value in India? What is the significance of this value?	Page:187	3

15	What is angle of dip? How a magnetic needle gets tilted in the northern and southern hemisphere of the earth?	Page:187	2
16	In the magnetic meridian of a certain place, the horizontal component of the earth's magnetic field is 0.26G and the dip angle is $60^\circ$ . What is the magnetic field of the earth at this location?	Page:188	2
17	Explain briefly what happens to the magnetic needle at the poles?	Page:188	1
18	State Gauss's law in magnetism.	Page:182	1

## MAGNETISM

### Test Paper-II

**MAX MARKS: 30**

**TIME: 90Mts**

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	What are diamagnetic substances? Briefly explain what is the cause for diamagnetism? Give any two examples of diamagnetic substances.	Page:192	3
2	What type of materials are superconductors? Give any one application of a superconductor. .	Page:192	2
3	What are paramagnetic materials? Give an example. How do they behave inside an external magnetic field?	Page:193	2
4	What is Curie's law? State the factors on which the susceptibility and relative permeability of a paramagnetic material depends upon. What is the effect of increasing the field on a paramagnetic material?	Page:193	3
5	What is a Ferro magnetic substance? What is the importance of a domain in a ferromagnetic substance?	Page:193	2
6	What are hard and soft Ferro magnets? Give examples for the same. Name the material that is used in permanent magnets.	Page:194	3
7	What is the effect of temperature on a Ferromagnetic substance? How is related to curie temperature? How susceptibility is related to temperature for a temperature above the curie temperature.	Page:194	3
8	What are permanent magnets? Give different ways of making a permanent magnet. Also state what is the efficient way to make a permanent magnet?	Page:196	3
9	What are the properties of a material so that it can be used in making permanent magnet? Give any two examples for the same.	Page:196	2
10	Give the properties of a material that can be used as a Core of electromagnets .Give an example for the same.	Page:196	2
11	Briefly explain how a soft iron core in solenoid acts as an electromagnet?	Page:196	2

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| 12 | Give the properties of a material that can be used in transformer cores.  | Page:196 | 1 |
| 13 | Give any two applications of electromagnets.  | Page:196 | 1 |
| 14 | A magnetic needle in a uniform magnetic field experiences a torque but not net force.<br>An iron nail near a bar magnet, however, experiences a force of attraction in addition to a torque. Why? | Page:179 | 1 |

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