INDIAN SCHOOL DARSAIT
DEPARTMENT OF PHYSICS

Subject : PHYSICS	Topic : MAGNETISM & MATTER	Date of Worksheet : 6.6.17 Worksheet # 6
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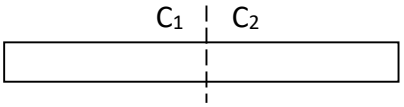
Name of the Student :_____	Class & Division : _____	Roll Number : __

1.	A bar magnet AB is cut into two equal parts. One part is now kept over the other, so that pole C_2 is above C_1. If M is the magnetic moment of the original magnet, what would be the magnetic moment of the combination so formed? 
2.	Draw a plot showing variation of intensity of magnetisation with the applied magnetic field intensity for bismuth. Under what condition does diamagnetic material exhibit perfect conductivity and perfect diamagnetism? What is the characteristic property of a diamagnetic material?
3.	Explain the following: (i) Why do magnetic lines of force form continuous closed loops? (ii) Why are field lines repelled when a diamagnetic material is placed in an external uniform magnetic field? (iii) Magnetic field lines can be entirely confined within the core of the toroid, but not within a straight solenoid. Why?
4.	Name the three element of earth's magnetic field. Where on the surface of the earth is the vertical component of the earth's magnetic field zero?
5.	In which direction would a compass needle free to move in the vertical plane points to, if located right on the geomagnetic north or south pole?
6.	Where on the earth's surface is the value of angle of dip maximum? (**2011**)
7.	A magnetic needle, free to rotate in vertical plane, orients itself vertically at a certain place on the Earth. What are the values of horizontal component of Earth's magnetic field and angle of dip at this place? (**2012**)
8.	What is the angle of dip at a place where the horizontal and vertical components of Earth's magnetic field are equal? (**2012**)

9.	A small magnet is pivoted to move freely in the magnetic meridian. At what place on earth's surface will the magnet be vertical? (**2012**)
10.	Define the term magnetic permeability of a magnetic material. Write any two characteristics of a magnetic substance if it is to be used to make a permanent magnet. Give an example of such a material.
11.	The vertical component of earth's magnetic field at a place is $\sqrt{3}$ times the horizontal component. What is the value of angle of dip at this place?
12.	Soft iron is preferred for making electromagnets. Give one reason.
13.	The susceptibility of a magnetic material is 2.6×10^{-5}. Identify the type of magnetic amterial and state its two properties. (**2012**)
14.	Distinguish between diamagnets and Ferro magnets with respect to their intensity of magnetisation, behaviour in non-uniform magnetic field and susceptibility.
15.	Three identical specimens of magnetic materials Nickel, antimony and aluminium are kept in non-uniform magnetic field. Draw the modification in field lines in each case.
16.	If χ- stands for the magnetic susceptibility of a given material, identify the class of materials for which (i) $-1 \geq \chi < 0$ (ii) $0 < \chi < \varepsilon$. Write the range of magnetic permeability of these materials. (**2008**)
17.	(a) A magnetic dipole is placed in a uniform magnetic field with its axis tilted with respect to its position of stable equilibrium. Deduce an expression for the time period of (small amplitude) oscillation of this magnetic dipole about an axis, passing through its centre and perpendicular to its plane.
18.	Two magnets of equal magnetic moment vibrate in earth's field with their opposite poles on the same side? What is their time period?
19.	What is the basic difference between the atom or molecule of a diamagnetic and a paramagnetic material? Why are elements with even atomic number more likely to be diamagnetic?
20.	How does a paramagnetic material behave in presence of external magnetic field? Explain with the help of an appropriate diagram what happens when the temperature of a paramagnetic sample is lowered? To which of the two- a polar dielectric or a non-polar dielectric – does a paramagnetic material correspond? Justify your answer.