

CHOITHRAM SCHOOL MANIKBAGH INDORE

CLASS XII- Session: 2017-18

Subject: Physics

Allotment Date: 21/07/17

Assignment No: II

Submission Date: 27/07/17

S.No.	Questions	Level	Mark
	OBJECTIVE		
Q.1	What are the magnetic elements in earth's magnetism ?	Knowledge	1
Q.2	An electron beam is projected along -y axis ,experiences a force due to magnetic field along +x axis. Write formula for force and find the direction of magnetic field.	Understanding	1
Q.3	A magnet of magnetic moment M is bent in the form of a semi circle. Find its new magnetic moment .	Hot	1
	SHORT ANSWER TYPE - I		
Q.4	In the relation $\vec{F} = q(\vec{v} \times \vec{B})$, which pairs are always perpendicular to each other. What is the change in kinetic energy of charge q in uniform magnetic field .	Knowledge	2
Q.5	An ammeter and a milliammeter are converted from the same galvanometer, out of the two which current measuring device has higher resistance and why?	Understanding	2
Q.6	A long wire carries a steady current. It is bent into a circle of one turn and the magnetic field at the centre of the coil is B. it is then bent into a circular loop of n turns. Find the magnetic field at the centre of the coil .	Logical	2
Q.7	A wire bent in the form of an equilateral triangle ABC of side a carries a current i. Find the magnetic field at a point having equal distance a from A, B and C.	Hot	2
	SHORT ANSWER TYPE - II		
Q.8	A solenoid has a length $L = 1.23\text{m}$ and an inner diameter $d = 3.55\text{cm}$. It has five layers of windings of 850 turns each and carries a current $i_0 = 5.57\text{A}$. What is B at its center?	Understanding	3
Q.9	Kamal's uncle was advised by his doctor to undergo an MRI scan test of his chest and gave him an estimate of the cost. Not knowing the significance of this test and finding it to be too expensive he first hesitated. When the kamal learnt about this he decided to take help of his family, friends and neighbor arranged for the cost .He convinced his uncle to undergo this test so as to enable the doctor to diagnose the disease. He got the test done and the resulting information greatly helped the doctor to give him proper treatment. (a) What according to you are the values displayed by kamal, his family, friends and neighbours ? (b) If MRI test involved a magnetic field of 0.1T, find the maximum and minimum values of the force that this field could exert on a proton moving with speed of 104 m/sec. State the condition under which the force can be	Value based	3

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	minimum .		
Q.10	A circular conductor, of uniform resistance per unit length, is connected to a battery of 4 V. The total resistance of the conductor is 4Ω . Find the net magnetic field at the centre of the conductor .What is the ratio of magnetic field at the centre due to 3Ω and 1Ω resistance of circular coil ?	MultiConceptual	3
LONG ANSWER TYPE			
Q.11	(a) Explain, giving reasons, the basic difference in converting a galvanometer into (i) a voltmeter and (ii) an ammeter. (b) Two long straight parallel conductors carrying steady current I_1 and I_2 are separated by a distance 'd'. Explain briefly, with the help of a suitable diagram, how the magnetic field due to one conductor acts on the other. Hence deduce the expression for the force acting between the conductors. Mention the nature of this force.	Logical	5
Q.12	A battery is connected between two points A and B on the circumference of a uniform conducting ring of radius r and resistance R . One of the arcs AB of the ring subtends an angle θ at the centre. Find value of the magnetic induction at the centre due to the current in the ring.	Hot	5

