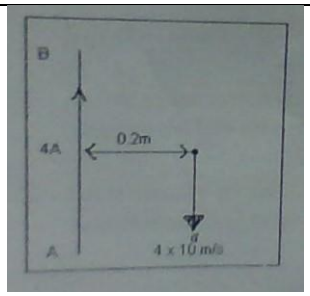
INDIAN SCHOOL NIZWA - WORKSHEET

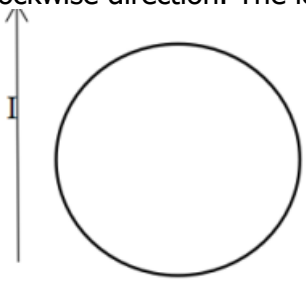
PHYSICS

CH: 4,5 CBSE BOARD QUESTIONS

Name: _____ Date:_____ Class:XII Sec: A___

1.	A proton and an electron travelling along parallel paths enter a region of uniform magnetic field, acting perpendicular to their paths. Which of them will move in a circular path with higher frequency? **(2018 – CBSE)**	1
2.	Two long straight wires carrying currents of 2A and 5A in the same direction are kept parallel, 10 cm apart from each other. Calculate the force acting between them and write its nature. **(2019 CBSE)**	2
3.	A bar magnet of magnetic moment 6j/T is aligned at 60^0 with a uniform external magnetic field of 0.44T. calculate (a) work done in turning the magnet to align its magnetic moment (i) normal to the magnetic field, (ii) opposite to the magnetic field, and (iii) torque on the magnet i the final position in case (ii). **(2018 CBSE)**	3
4.	(a) An iron ring of relative permeability μ_r has windings of insulated copper wire of n turns pet meter. When the current in the winding is I, find the expression for the magnetic field in the ring. **(b)** The susceptibility of a magnetic material is 0.9853. Identify the type of magnetic material. Draw the modification of the field pattern on keeping a piece of this material in uniform magnetic field. **(2018 CBSE)**	3
5.	(a) Depict the magnetic field lines due to a circular current carrying loop showing the direction of field lines. (b) A current I is flowing in a conductor placed along the X axis as shown. Find the magnitude and direction of magnetic field due to a small current element dl lying at the origin at points (i) 0,d,0 and (ii) 0,0,d **(2019 CBSE)**	3
6.	(a) Briefly explain how a galvanometer is converted into an ammeter. (b) A galvanometer has a resistance of 15Ω and it shows full scale deflection for a current of 4mA. Convert it into an ammeter of range 0 to 6A. **(2019 CBSE)**	3
7.	(a) Briefly explain how a galvanometer is converted into a voltmeter. **(b)** A voltmeter of a certain range is constructed by connecting a resistance of 980Ω in series with a galvanometer. When the resistance of 470Ω is connected in series, the range gets halved. Find the resistance of the galvanometer. **(2019 CBSE)**	3
8.	A long wire AB carries a current of 4A. A proton P travels at 4×10^6 m/s parallel to the wire 0.2m from it and in a direction opposite to the current as shown. Calculate the force which the magnetic field due to the current carrying wire exerts on the proton. Also give its direction.	3

	 **(2019 CBSE)**	
9.	A particle of charge q and mass m is moving with velocity V in the + x direction. (a) It is subjected to a uniform magnetic field b directed along the negative z direction. Explain briefly the trajectory it would describe. (b) When the particle is subjected simultaneously to both magnetic and electric filed directed along Z axis and y axis respectively, obtain the condition when the particle will go undeflected. **(2019 CBSE)**	
10.	In an ammeter 4% of the mains current is passing through galvanometer. If the galvanometer is shunted with a 5 Ω resistance, then resistance of galvanometer will be A. 116 Ω B. 117 Ω C. 118 Ω D. 120Ω	1
11.	An electric current is flowing through a circular coil of radius R. The ratio of the magnetic field at the centre of the coil and that at distance $2\sqrt{2}$ R from the centre of the coil on its axis is A. $2\sqrt{2}$ B. 27 C. 36 D. 8	1
12.	Two concentric and coplanar circular loops P and Q have their radii in the ratio 2:3. Loop Q carries a current 9A in the anticlockwise direction. For the magnetic field to be Zero at the common centre, loop P must carry A. 3 A in clockwise direction B. 9 A in clockwise direction C. 6 A in anticlockwise direction D. 6 A in the clockwise direction	
13.	The magnetic field due to a current carrying circular loop of radius 3cm at a point on the axis at a distance of 4cm from the centre is 54μT. What will be its value at the centre of the loop. A. 250 μT B. 150 μT C. 125 μT D. 175 μT	1
14.	A vertical straight conductor carries a current vertically upwards. A point P lies to the east of it at a small distance and another point Q lies to the west at the same distance. The magnetic field at P is A. Greater than at Q B. Same as at Q C. Less than at Q D. Greater or less that at Q, depending upon the strength of current.	1
15.	Current sensitivity of a galvanometer can be increased by decreasing: A. Magnetic field B B. number of turns N	

	C. torsional constant K D. Area A	
16.	In the given figure, the wire is carrying current I and the loop carrying current in the clockwise direction. The loop is fixed but the straight wire can move. The straight wire will  A. Remain stationary B. Move towards the loop C. Move away from the loop D. Rotate about the axis	1
17.	A current carrying loop is placed in a uniform magnetic field. The torque acting on the loop does not depend upon the A. shape of the loop B. area of the loop C. value of the current D. magnetic field	1
	Each of these questions contain two statements, Assertion and Reason. Each of these questions also has four alternative choices, only one of which is the correct answer. You have to select one of the codes (a), (b), (c) and (d) given below. (a) Both Assertion and reason are correct; reason is a correct explanation for assertion. (b)Both Assertion and reason are correct; reason is not a correct explanation for assertion. (c) Assertion is correct but reason is in correct. (d) Both Assertion and Reason are incorrect.	
18.	Assertion (A): A magnetic field produced by a current carrying solenoid is independent of its length and cross-sectional area. Reason (R): The magnetic field inside the solenoid is uniform	1
19.	Assertion (A): The resistance of an ideal voltmeter should be infinite. Reason (R): The lower resistance of a voltmeter gives a reading lower than the actual potential difference across the terminals	1
20.	Assertion (A): Magnetic field cannot change kinetic energy of a moving charge. Reason (R): Magnetic field cannot change velocity vector.	1