MAGNETIC EFFECTS OF CURRENT

Test Paper-I

MAX MARKS: 30 **TIME: 90Mts**

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	Give the results of Oersted's experiment on current carrying conductor kept nearer to a magnetic needle.	Page:132	2
2	What is the force acting on an electric charge q moving with a velocity v in the presence of both the electric field and magnetic field? Give the features of the force of interaction of charge with the magnetic field.	Page:134	3
3	What is the SI unit of magnetic field? Give the value of it in terms of gauss. Also give the value of earth's magnetic field.	Page:135	2
4	Derive an expression to find the magnetic force acting on a current-carrying conductor.	Page:135	2
5	Give the physical significance of permittivity and permeability of a medium.	Page:136	2
6	A straight wire of mass 200 g and length 1.5m carries a current of 2 A. It is suspended in mid-air by a uniform horizontal magnetic field B. What is the magnitude of the magnetic field?	Page:137	2
7	Derive an expression to find the radius of the circular path traced out by a charged particle q moving with a velocity v perpendicular to the direction of the magnetic field. Also find its angular frequency.	Page:138	3
8	How will you select charged particles of a particular velocity out of a beam containing charges moving with different speeds?	Page:140	2
9	Define pitch of the helical path described by a charged particle moving inside a magnetic field B with a velocity v.	Page:138	1
10	Give the principle of working of a cyclotron. What is the use of a cyclotron?	Page:140	2
11	With a neat diagram explain the working of a cyclotron.	Page:141	3
12	show that kinetic energy attained by the particles moving inside the cyclotron is $KE = q^2 B^2 R^2 / 2m$	Page:141	3
13	A cyclotron's oscillator frequency is 10 MHz What should be the operating magnetic field for accelerating protons? If the radius of its 'dees' is 60cm, what is the kinetic energy (in MeV) of the proton beam produced by the accelerator.	Page:142	3