CHAPTER-4

HOME ASSIGNMENT

i)

ii) Cyclotron is used to accelerate

ans) b) Any kind of charged particle

ii) The force that accelerates the particles in the cyclotron is

ans) a) Only electrostatic force

Reason: Magnetic force only plays role in keeping them in circular path

(iii) Choose the correct option

ans) a) Conductor shields any charge within it from electric fields created outside the conductor

(iv) Inside a dee

ans) b) The particles velocity changes.

(Because of Magnetic field, the direction changes)

(v) What is the formula for maximum speed attained by a charged particle in a cyclotron:

ans) a) $V_{max} = \frac{BqR}{M}$

(vi) In a cyclotron

ans) a) any speed can be obtained by a charged particle by choosing suitable dee radius.

Q2

i) Galvanometer was named after

ans) a) Italian electricity researcher Luigi Galvani

ii) Galvanometer is used

ans) to detect and measure small electric current

iii) Choose the correct option for current sensitivity of galvanometer.

ans) a) $S_i = \frac{\theta}{i} = \frac{NBA}{C}$

(iv) Increasing the current sensitivity

ans) b) may not change the voltage ~~sensitivity~~

v) Choose the correct option for design formula of galvanometer

ans a) $i = \left(\frac{C}{BNA}\right)\theta$

(vi) In the galvanometer the radial magnetic field makes the magnetic torque:

ans) Directly proportional to $\sin\theta$.

ASSERTION - REASON

Q3

i Assertion: A steady angular deflection is produced by the spring to produce a counter torque which balances the magnetic torque

Reason: In order to improve the strength of the magnetic field and to make the field radial a soft iron core is placed inside the coil

ans B · Assertion & reason are true but reason is not the correct explanation

ii) ans A · Both Assertion & reason are true & reason is the correct explanation

iii) ans A · Both Assertion & reason are true & reason is the correct explanation

iv) ans D.

Correct, When magnetic dipole is placed in a non-uniform magnetic field, Assertion: ~~only~~ Both torque & force acts on the dipole

Correct reason: Force will not act on dipole if magnetic field were uniform

(v) ans B. Both A & R are true but R is not the correct explanation of A

(vi) ~~ans~~ Assertion:

Galvanometer cannot be used as an ammeter to measure the value of the ~~the~~ current in a given circuit.

Reason: Galvanometer gives a full-scale deflection for a current of the order of micro-ampere.

ans) A . But A & R are true & R is the correct explanation

Q4 MCQ

Q1) ans a) A voltmeter is connected in parallel and current through it is negligible.

Q2) The resistance of an ideal voltmeter is:

ans) c) infinity

Q3) a) more

Q4) Choose the correct option for design formula of galvanometer.

ans) a) $i = \left(\frac{C}{BNA}\right)\theta$

Q5) Choose the correct option for current ~~boost~~ sensitivity of galvanometer.

ans) a) $S_i = \frac{\theta}{i} = \frac{NBA}{C}$