Home Assignment

(1) i) cyclotron is used to accelerate

Ans: a) some kind of charged particles

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

Ans: a) Only electrostatic force

iii) correct option

Ans: a) conductor shields any charge within it from $\vec{E}$ created outside the conductor.

iv) Inside a dee

Ans: d) The particle's kinetic energy changes

v) Formula for max speed attained by a charged particle in cyclotron

Ans: $V_{max} = qBR/m$

vi) In a cyclotron

Ans: b) Maximum speed attained by a charged particle is limited by the Relativistic variation of mass with speed.

(2) i) Galvanometer was named after

Ans: a) Italian electricity researcher Luigi Galvani

ii) Galvanometer is used to

Ans: a) detect and measure small electric current

iii) Current sensitivity of galvanometer

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

iv) Increasing the current sensitivity

Ans: d) none of these

v) Correct design formula

Ans: a) $i = \left(\frac{C}{NBA}\right)\theta$

vi) the radial magnetic field makes the magnetic torque

Ans: b) independent of θ

(3) i) b) Both (A) and (R) are true but (R) is not correct explanation of (A).

ii) a) Both (A) and (R) are correct (R) is correct explanation of (A)

iii) a) " " " "

iv) D) Both (A) and (R) are false. In non-uniform $\vec{B}$, both a torque and a net force act on the dipole. If $\vec{B}$ would be uniform the net force on the dipole would be zero.

v) B)

vi) A)

(4) (1) a)
(2) c) Infinity
(3) a) more
(4) a) $i = \left(\frac{C}{A \theta N}\right)\theta$
(5) a) $S_i = \frac{\theta}{i} = \frac{NBA}{C}$