16th July

Ch-4-Moving charges and magnetism

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 → b) only magnetic force

iii) Choose the correct option
Ans → a) Conductor shields any charge within it from electric field created outside the conductor.

iv) Inside a dee.
Ans → d) the particle's kinetic energy changes.

v) What is the formula for maximum speed attained by a charged particle in a cyclotron:
Ans → a) $v_{max} = \frac{qBR}{m}$

vi) In a cyclotron
Ans → d) none of these

2. i) Galvanometer was named after
Ans → a) Italian electricity researcher Luigi Galvani.

ii) Galvanometer is used
Ans → a) to detect and measure small electric current

iii) Choose the correct option for current sensitivity

→

of galvanometer

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

ii) Increasing the current sensitivity 2

Ans → b) may not change the voltage sensitivity

v) Choose the correct option for design formula of galvanometer

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

3. i) Assertion: A steady angular deflection is produced by the ~~angular~~ 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~~ coil.

Ans i) → (B) Both Assertion an Reason are true but Reason is not the correct explanation of the Assertion.

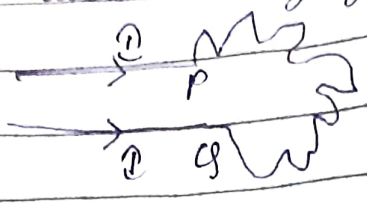
ii) Assertion: Moving coil galvanometer uses phosphor-bronze wire for suspension.

Reason: The Phosphor-bronze wire has a small couple per unit twist.

Ans ii) → (A) Both Assertion and Reason are true and Reason is the correct explanation of the assertion

iii) Assertion: A wire bent into an irregular shape with the points P and S fixed. If a current is passed through the wire, then the area enclosed by the →

irregular portion of the wire increases.
Reason: Opposite currents carrying wires repel each other.



Answer → (A) Both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.

iv) Assertion: When a magnetic dipole is placed in a non-uniform magnetic field, only a torque acts on the dipole.
Reason: Force would also act on dipole if magnetic field were uniform.
Answer → (D) Both Assertion and Reason are false.

v) Assertion: If the resistance of shunt of an ammeter is increased, the range of ammeter is reduced.
Reason: If the series resistance of a voltmeter is increased, the range of voltmeter is increased.
Answer → (B) Both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

vi) Assertion: Galvanometer cannot as such be used as an ammeter to measure the value of the current in a given circuit.
Reason: Galvanometer gives a full-scale deflection for a current of the order of micro ampere.
Answer → (A) Both Assertion and Reason are true and Reason is the correct explanation of the Assertion

4. i/p A sensitive galvanometer like a moving coil galvanometer can be converted into an ammeter or a voltmeter by connecting a proper resistance to it. Which of the following statements is true?
Ans → d/p an ammeter is connected in series in a circuit and the current through it is negligible.

ii/p The resistance of an ideal voltmeter is
Ans → i/p infinity

iii/p Two identical galvanometers are converted into an ammeter and a milliammeter. Resistance of the shunt of milli-ammeter through which the current passes through will be
Ans → a/p more

iv/p Choose the correct option for design formula of galvanometer
Ans → a/p $i = \left(\frac{C}{BNA}\right)\theta$

v/p Choose the correct option for current sensitivity of galvanometer.
Ans → a/p $S_i = \frac{\theta}{i} = \frac{NBA}{C}$