AAFAQ ACADEMY KASUR

Physics Book II **Chapter (14) NEW** **Objective + Subjective**

ELECTROMAGNETISM

Test Session 2014 – Name : _____ Roll No: (in words) _____

OBJECTIVE

Time: 10 Minutes **Marks: 10**

Note: Write your roll No. in space provided. Over-writing, cutting, erasing, using of lead pencils will result into loss of marks.

Q.1: Encircle the correct answers.

i. The dimensions of magnetic flux are:

a) $\left[M^1L^{-2}T^1A^1\right]$

b) $\left[MLT^{-2}A^{-1}\right]$

c) $\left[ML^2T^2A^{-1}\right]$

d) $\left[ML^2T^{-2}A^{-1}\right]$

ii. The unit of magnetic induction $\vec{B}$ is:

a) Coulomb
b) Ampere
c) Coulomb/ampere
d) Weber/m^2

iii. The magnetic field is uniform and stronger:

a) Outside the solenoid
b) Inside the solenoid
c) At the central part of the solenoid
d) None of these

iv. The permeability of free space is measured in:

a) Wb/A/m
b) A m/Wb
c) Wb/A m
d) m/Wb A

v. if a electron is projected in a magnetic field with velocity V, it will experience a force:

a) $\vec{F} = e(\vec{B} \times \vec{v})$

b) $\vec{F} = e(\vec{v} \times \vec{B})$

c) $\vec{F} = \vec{v}(e \times \vec{B})$

d) $\vec{F} = e(\vec{v}.\vec{B})$

vi. Lorentz force means the force acting on a particle, which is:

a) Magnetic force only
b) Electric force only
c) Sum of electric and magnetic force
d) None of these

vii. Ampere's circuital law is $\sum_{i=1}^{N}(\vec{B}.\Delta\vec{L})_i$ is equal to

a) $\mu_0 I$

b) $\mu_0 A$

c) $\mu_0 B$

d) None of the above

viii. CRO works by deflecting the beam of electron as they pass through:

a) Uniform magnetic field
b) Uniform electric field between tow sets of parallel plates
c) Non-uniform magnetic field
d) None of these

ix. In CRO, the output waveform of time base generator is:

a) Circular
b) Square
c) Sinusoidal
d) Saw-toothed

x. The acceleration of an electron of mass m and charge e, moving with uniform speed v at right angles to a magnetic field of flux density B, it given by:

a) $\frac{Bev}{m}$

b) $\frac{Be}{m}$

c) $\frac{Bv}{m}$

d) Bevm

SUBJECTIVE

Time: 30 min. **Marks: 20**

Q.2: Write the short answers. **(2×6)**

i. Why does the picture on a TV screen become distorted when a magnet is brought near the screen?

ii. Is it possible to orient a current loop in a uniform magnetic field such that the loop will not tend to rotate? Explain.

iii. How can you use a magnetic field to separate isotopes of chemical element?

iv. What should be the orientation of a current carrying coil in a magnetic field so that torque acting upon the coils is (a) maximum (b) minimum?

v. Why the resistance of an ammeter should be very low?

vi. Why the voltmeter should have a very high resistance?

vii. Write uses of CRO.

viii. How Galvanometer can be made sensitive?

Note: Long questions:

Q.3: **(a)** Calculate the force on a moving charge in a uniform magnetic field. (5)

(b) What current should pass through a solenoid that is 0.5 m long with 10,000 turns of copper wire so that it will have a magnetic field of 0.4T? (3)