Serial No. of Answer Book	MRD-E/XI (A)	Roll Number
_____	**Physics Part-II**	_____

Fic. No. _____

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Physics Part-II

Time: 20 Min **SECTION "A"** Marks: 18

NOTE:Use this sheet for this section. No marks will be awarded for cutting, erasing or overwriting.

Q1.Choose the correct answer from the given choices i.e. (a, b, c, d) and insert into the relevant box.

(i). In vector form the electric intensity between two oppositely changed parallel plates will be…

(a). $S/2to$ (b). $\frac{S}{to}\hat{r}$ (c). S to $\hat{r}$ (d). $\frac{to}{2s}\hat{r}$

(ii). The negative of Potential gradient is.

(a). Potential energy (b). Electric Field intensity (c). Voltage (d). None of these

(iii). Kirchoff's loop rule is based on conservation of.

(a). Charge (b). Energy (c). Mass (d). all of these

(iv). Device which convert Heat energy into electrical energy is called.

(a). Generator (b). Electrical energy is called (c). Solar cell (d). Thermocouple

(v). There is no magnetic force on a charge particle moving ____ to the magnetic field.

(a). Perpendicular (b). Parallel (c). 30^0 (d). 45^0

(vi). A current carrying loop when placed in a Uniform magnetic Field experiences.

(a). Magnetic Flux (b). Electric Flux(c). Force (d). Torque

(vii). Motional emf generated in a conductor is directly proportional to the.

(a)Velocity of conductor. (b)Strength of Magnetic field. (c)Length of Conductor. (d)All of these

(viii). Mathematical expression for energy density is given by.

(a). $\mu_m = 2\ \mu_o B^2$ (b). $\mu_m = \frac{1}{2}$ $B^2 \mu_o$ (c). $\mu_m = \frac{1}{2}\frac{B}{\mu o}^2$ (d). $\mu_m = B^2\ \mu_o$

(ix). Conversion of a.c to d.c is called.

(a). Amplifier (b). Rectifier (c). Transistor (d). Photodiode

(x). In the resonance condition of the RLC series circuit, the current is.

(a). Minimum (b). Maximum (c). Zero (d). all of them

(xi). Tensile stress is force per unit_____.

(a). Length (b).Area (c). Volume (d). All of them

(xii). The minimum energy required to break a covalent bond in Ge is.

(a). 0.7 eV (b). 1.09 eV (c). 2.1 eV (d). 0.32 eV

(xiii). A diode characteristic curve is graph between.

(a) Current and Time. (b) Voltage ant time. (c) Voltage and Current.

(d). Forward voltage and reverse voltage.

(xiv). The number of diodes used in Full-wave Bridge Rectifier are.

(a). 1 (b). 2 (c).3 (d). 4

(xv). Gamma rays carries a charge_____.

(a). +e (b). –e (c). no charge (d). + 2e

(xvi). The range of β-Particle in air is greater that that of α -Particle by_____.

(a). 10 Times (b). 100 Times (c). 1000 Times (d). none of these

(xvii). Light amplification by stimulated emission of radiation means.

(a). X-rays (b). Gamma rays (c). Laser (d). Maser

(xviii). The Rest mass of Photon is.

(a). m_oc^2 (b). mc^2 (c). Zero (d). 9.1×10^{-31} kg

MRD-E/XI (A)

Physics Part-II

Time: Allowed: 2.40h Marks: 67

SECTION "B"

Q2. Attempt any Ten of the following. All carry equal marks. (40)

(i) A Magnetic Field accelerates a charge particle, but does no work on the particle. Explain this statement .

(ii) State some similarities and some differences between electric Fields and gravitational fields.

(iii) Do electrons move up or Fall down a potential gradient?

(iv) In the normal operation of a resistor, what limits the temperature rise due to joule heating?

(v) A wire is covered with a carpet. How will you find whether any current is passing through the wire?

(vi) What is meant by AM and FM?

(vii) Can a step-up transformer increase the power level?

(viii) In a RL circuit, will the current lag of lead the Voltage? Illustrate you by phasor diagram?

(ix) Write short notes on Pair Production.

(x) Why is the base current in a Transistor very small?

(xi) It is said that nuclear energy is raw heat energy. How is heat produced in a nuclear reactor?

(xii) Distinguish among crystalline solid and amorphous solid.

(xiii) Explain the difference between laser light and light from an electric bulb.

SECTION "C"

Note: Attempt any THREE of the following questions. All questions carry equal marks. (27)

Q3. (A) Define capacitance of a capacitor. Derive the mathematical expression for the growth and decay of charge in the capacitor.

(B) If there are 10^{18} electrons flowing any cross-section of a wire in 1 minute, what is the current in the wire?

Q4. (A) What is a Transformer? Give its Principle, Construction and Necessary mathematical theory.

(B) The back emf in a motor is 120 v when the motor is turning at1680 rev/min. what is the back emf when the motor turns 3360 rev/min?

Q5. (A) Discuss briefly davisson – Germer as well as G.P Thompson's experiments on Electron diffraction. How do these experiments verify the wave nature of electron?

(B) What is longest and shortest wavelengths for paschen series.

Q6. Write Short note on any Two of the following.

(i) Ampere's Circuital Law

(ii) Light emitting diode

(iii) Production of X-Rays and its Properties.