Paper Code Number: 4472	2025 (1st-A) INTERMEDIATE PART-II (12th Class)	Roll No: _____

PHYSICS PAPER-II GROUP-II

TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM MARKS: 17

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	A charge at rest creates around it:	Electric field	Magnetic field	Gravitational field	All of these
2	Drum in a photocopier in coated with layer of:	Copper	Silver	Selenium	Aluminium
3	The average velocity gained by the electron in a conductor placed in an electric field is:	Phase velocity	Drift velocity	Constant velocity	Instantaneous velocity
4	A current flowing towards the reader is denoted by:	Cross	A bracket	Positive	A dot
5	The magnetic force is simply a:	Reflecting force	Deflecting force	Restoring force	Gravitational force
6	If we make the magnetic field stronger, the value of induced current is:	Increased	Decreased	Vanished	Kept constant
7	The self induction is given by:	$NL = \phi I$	$NI = L\phi$	$N\phi = LI$	$N = LI$
8	The phase angle between the voltage and current in A.C circuit through a resistor is:	60°	90°	180°	0°
9	The capacitive reactance for capacitor "C" and frequency "f" is:	$X_C = \frac{1}{2\pi fC}$	$X_C = 2\pi fC$	$X_C = \frac{2\pi f}{C}$	$X_C = 2\pi fL$
10	The crystalline structure of $NaC\ell$ is:	Trigonal	Hexagonal	Cubical	Tetragonal
11	LED are made from semi-conductor:	Silicon	Germanium	Carbon	Gallium arsenide
12	An expression for current gain of a transistor by:	$\beta = I_C + I_B$	$\beta = \frac{I_C}{I_B}$	$\beta = \frac{I_B}{I_C}$	$\beta = I_C - I_B$
13	In annihilation, emitted photons move in opposite direction to conserve:	Mass	Charge	Momentum	Energy
14	Wavelength and momentum of any particle are related by the expression:	$\lambda = \frac{h}{mV}$	$\lambda = \frac{mV}{h}$	$\lambda = \frac{\ell}{h}$	$\lambda = \frac{m}{h}$
15	According to Bohr's 2nd postulate:	$mv = \frac{nh}{2\pi}$	$mr = \frac{h}{2\pi}$	$mr = \frac{mh}{2\pi}$	$mvr = \frac{nh}{2\pi}$
16	The number of neutron in Li are:	02	03	04	07
17	How many times, the α-particle is more massive than electron?	9332	8332	7332	6332

INTERMEDIATE PART-II (12th Class)	2025 (1st-A)	Roll No: _____
PHYSICS PAPER-II GROUP-II		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **$8 \times 2 = 16$**

(i)	Describe the force or forces on a positive point charge when placed between parallel plates with similar and equal charges.
(ii)	The potential is constant throughout a given region of space. Is the electrical field zero or non-zero in this region? Explain.
(iii)	Do electrons tend to go to region of high potential or of low potential?
(iv)	t is the effect of dielectrics in electric polarization on surface charge density and electric field intensity?
(v)	What is the Dead Beat Galvanometer? How we can make it?
(vi)	What should be the orientation of a current carrying coil in a magnetic field so that torque acting upon the coil is minimum?
(vii)	Describe the change in the magnetic field inside a solenoid carrying a steady current I, if the number of turns remains same, but the length is doubled?
(viii)	Why does the picture on a TV screen become distorted when a magnet is brought near the screen?
(ix)	Define decay constant of radioactive element? What is its unit?
(x)	A particle which produced more ionization is less penetrating. ?
(xi)	What do you understand by background radiation? State two source of this radiation.
(xii)	If someone accidentally swallows an α – source and a β – source. Which would be more dangerous to him? Explain why?

3. Attempt any eight parts. **$8 \times 2 = 16$**

(i)	Why does resistance of a conductor rise with temperature?
(ii)	Do bends in a wire affect its electrical resistance?
(iii)	State the Kirchhoff's current rule.
(iv)	How many times per second will an incandescent lamp reach maximum brilliance when connected to a $50Hz$ source?
(v)	How does doubling the frequency affect the reactance of an inductor?
(vi)	What is the principle of a "metal detector"? Explain.
(vii)	What is meant by Ultimate Tensile Strength(UTS)?
(viii)	What do you meant by an energy band?
(ix)	Define modulus of elasticity with units.
(x)	What is a P-n junction?
(xi)	In case of common emitter amplifier, what is meant by "common"? Show by diagram.
(xii)	Why ordinary silicon diode do not emit light?

4. Attempt any six parts. **$6 \times 2 = 12$**

(i)	Can a D.C motor be turned into a D.C generator? What changes are required to be done?
(ii)	Can an electric motor be used to drive an electric generator with the output from the generator being used to operate the motor?
(iii)	Which has the lowest energy quanta? Radiowaves or X – rays.
(iv)	When light shines on a surface, is momentum transferred to the metal surface?
(v)	How can the spectrum of hydrogen contains so many lines when hydrogen contain one electron?
(vi)	State Faraday Law of electromagnetic induction.
(vii)	Differentiate between inertial and non-inertial frame.
(viii)	t is pair production? Write its equation.
(ix)	Define ionization and excitation potential.

SECTION-II

NOTE: Attempt any three questions. **$3 \times 8 = 24$**

5.(a)	State Gauss's law. Find electric intensity at a point due to an infinite sheet of charge.	05
(b)	How many electrons pass through an electric bulb in one minute if the $300mA$ current is passing through it.	03
6.(a)	State Ampere's law. Using this law, derive an expression for flux density inside the current carrying solenoid.	05
(b)	An ideal step down transformer is connected to main supply of $240V$. It is desired to operate a $12V, 30W$ lamp. Find the current in the primary and the transformer ratio.	03
7.(a)	Explain the working of operational amplifier as non-inverting amplifier and find its gain.	05
(b)	What is the resonant frequency of a circuit which includes a coil of inductance $2.5H$ and a capacitance $40\mu F$.	03
8.(a)	Draw Hysteresis loop for a ferromagnetic material and explain its any four features.	1+4
(b)	Calculate the de-Broglie Wavelength of a $140g$ ball moving at $40ms^{-1}$	03
9.(a)	Write a detailed note on working and uses of mass spectrograph.	05
(b)	The wavelength of K X – ray from copper is $1.377 \times 10^{-10} m$. What is energy difference between the two levels from which this transition results?	03