PART – I 22/01 (★★)

(INTERMEDIATE)

Sign. Dy. Supdnt. Fictitious Roll No. (For Office Use) Sign. Candidate

PHYSICS (Group-I) (INTERMEDIATE) (★★)

(PART – I) 22/01 **Marks : 17**

(OBJECTIVE PART) AJK-GI-22 **Time : 20 Minutes**

Note:- Write your Roll No. in space provided. Over writing, cutting, using of lead pencil will result in loss of marks. All questions are to be attempted.

1- Each question has four possible answers, Tick (✓) the correct answer. **(17)**

1	If "N" is number of lines ruled over a grating of length "L". the grating element "d" will be							
	A	$\frac{N}{L}$	B	$\frac{2N}{L}$	C	$\frac{L}{N}$	D	$\frac{N}{2L}$
2	The collimator in spectrometer is used to;							
	A	Disperse the light beam	B	Reflect the light beam	C	Converge the light beam	D	Make the light beam parallel
3	According to Charles' Law;							
	A	$V \propto T$	B	$V \propto n$	C	$V \propto \frac{1}{n}$	D	$P \propto \frac{1}{v}$
4	At constant temperature, the process is called;							
	A	Isothermal process	B	Adiabatic process	C	Isobaric process	D	Isochoric process
5	Which is the correct measurement of diameter of a wire measured by a device whose least count is 0.001 cm.							
	A	2.3 cm	B	2.31 cm	C	2.312 cm	D	2.3124 cm
6	The percentage uncertainty in mass and velocity are 2% and 3%. The maximum uncertainty in the measurement of kinetic energy is;							
	A	1 %	B	6 %	C	8 %	D	11 %
7	When two vectors are anti parallel, the angle between them is;							
	A	0°	B	90°	C	180°	D	270°
8	The resultant vector of two unit vectors which are mutually perpendicular to each other has magnitude.							
	A	Unity	B	Zero	C	$\frac{1}{\sqrt{2}}$	D	$\sqrt{2}$
9	An unpowered and unguided missile is called;							
	A	Simple missile	B	Remote control missile	C	Ballistic missile	D	Long range missile
10	If the initial velocity of the projectile is doubled, the time of flight will become.							
	A	Double	B	Same	C	Three Times	D	Four Times
11	If the momentum of a body is numerically equal to its kinetic energy. Then the speed of the body is;							
	A	1 ms^{-1}	B	2 ms^{-1}	C	4 ms^{-1}	D	8 ms^{-1}
12	The direction of angular momentum of a body moving in a circle is;							
	A	Along the tangent	B	Radially inward	C	Perpendicular to the plane of the circle	D	Radially outward
13	If the radius of earth is doubled, then value of critical velocity becomes.							
	A	$2vo$	B	$\frac{1}{2}vo$	C	$\frac{1}{\sqrt{2}}vo$	D	$\frac{1}{4}vo$
14	Bernoulli's theorem is applied to;							
	A	Solids	B	Plasma state	C	Liquids	D	Fluids
15	The distance covered by a body in one vibration is 20 cm. The amplitude of vibration is;							
	A	10 cm	B	5 cm	C	15 cm	D	20 cm
16	Which one the following media can transmit both transverse and longitudinal waves.							
	A	Solid	B	Liquid	C	Gas	D	Plasma
17	Phase angle of 180° corresponds to the path difference of;							
	A	$\frac{\lambda}{2}$	B	$\frac{\lambda}{4}$	C	2λ	D	λ

(The End)

PHYSICS (Group - I)
PAPER : PART – II

INTERMEDIATE
(Subjective Part)

Time : 2:40 Hours

Note:- Attempt any TWENTY TWO (22) short questions in all selecting eight from Q. 2 and Q. 3 each and six from Q. 4. (22 x 2 = 44)

SECTION – I

2- Write short answers of any eight questions. AIR-G1-22 (2 x 8 = 16)

i	Electric lines of force never cross. Why?	ii	Two opposite point charges, each of magnitude (q) are separated by a distance "2d". What is the electric potential at a point "p" mid-way between them?
iii	Describe the effect of time constant in RC Series circuit on the charging of the capacitor.	iv	Do electrons tend to go to region of high potential or of low potential?
v	If number of turns become double, but length of the solenoid remains same, then what will be the effect on the magnetic field of solenoid? Explain.	vi	Differentiate between magnetic flux and magnetic flux density. Also write their units.
vii	Write some uses of CRO.	viii	Magnetic field of 0.30 Tesla is acting in a direction perpendicular to the electric field of strength 10000 v m^{-1}, on a moving charge (q). What will be the speed of the charge electric force is equal to the magnetic force?
ix	State the operating principle of solid state detector.	x	Give a comparison of alpha particles and gamma radiations.
xi	A particle produces more ionization is less penetrating. Why?	xii	How can radio activity help in the treatment of cancer?

3- Write short answers of any eight questions. (2 x 8 = 16)

i	Describe a circuit which will give a continuously varying potential.	ii	Define temperature coefficient of resistance. Also write its unit.
iii	What are the difficulties in testing whether the filament of a lighted bulb obey ohm's law?	iv	Write down any two properties of parallel resonance circuit.
v	A 100 μF capacitor is connected to an alternating voltage of 24 V and frequency 50 Hz. Calculate reactance of a capacitor.	vi	Explain the conditions under which electromagnetic waves are produced from a source.
vii	Differentiate between crystalline and amorphous solids.	viii	What is meant by hysterisis loss? How it is used in the construction of a transformer?
ix	Define modulus of elasticity. Also discuss its three kinds.	x	What is net charge on n-type and p-type substance?
xi	Why a photodiode is operated in a reverse biased state?	xii	Why charge carriers are not present in depletion region?

4- Write short answers of any six questions. (2 x 6 = 12)

i	When the primary of a transformer is connected to a.c mains the current in it. (a) is very small if secondary circuit is open but (b) increases when the secondary circuit is closed. Explain these facts.	ii	Name the factors upon which the self-inductance depends.
iii	Give the two techniques to improve the efficiency of a transformer.	iv	If number of turns in a solenoid is doubled, keeping the other factors constant, how does the self inductance change?
v	If the speed of light were infinite, what would the equations of special theory of relativity reduce to?	vi	What is meant by threshold frequency and work function?
vii	State the Heisenberg uncertainty principle.	viii	What do you man when we say that atom is excited?
ix	Write down two uses of laser.		