PR XII (01) 16
PHYSICS (New)
Inter Part – II
(Fresh/Reappear)
Flc. No. _____
(For Board's Office use only)

Roll Number		Superintendent
In Figures: _____		Signature / Stamp:
In Words: _____		_____

PHYSICS (New)
Inter Part – II
(Fresh/Reappear)

Flc. No. _____
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Marks: 85

Time Allowed: 3 Hours

Note: There are THREE sections in this paper i.e. Section A, B and C.
Attempt Section-A on the same paper and return it to the Superintendant within the given time. No marks will be awarded for Cutting, Erasing or Overwriting. Marks of identification will lead to UFM case. Mobile Phone etc are not allowed in the examination hall.

Marks: 19

Time Allowed: 20 minutes

Q-I Write the correct option i.e. A, B, C or D in the empty box provided opposite to each part.

#	Question	A	B	C	D	Ans
i.	Pair production occurs only when energy of photon is at least equal to	A. 1.02 KeV	B. 1.02 eV	C. 1.02 MeV	D. 1.02 GeV	C
ii.	Current in semi conductor is caused by the movement of	A. Both electrons and holes	B. Electrons only	C. Holes only	D. None of these	A
iii.	The phase difference between the current and voltage at resonance is......	A. π	B. $-\pi$	C. $\frac{\pi}{2}$	D. 0	D
iv.	Lenz's Law is a consequence of the law of conservation of	A. Energy	B. Charge	C. Momentum	D. None of these	A
v.	Unit of decay constant λ is........	A. s^{-1}	B. m	C. m^{-1}	D. ms	A
vi.	The sinusoidal alternating voltage can be expressed by the equation V = ...	A. $V_0 \cos\omega t$	B. $\frac{V_0}{\sqrt{2}} \sin ft$	C. $V_m \sin\omega t$	D. None of these	C
vii.	If both the length and radius of a rod are doubled. Then the modulus of elasticity will........	A. Increase	B. Remain the same	C. Doubled	D. Decrease	B
viii.	Most of the electrons in the base of a NPN transistor flow.........	A. Into the base supply	B. Into the emit	C. Into the collector	D. Out of the base lead	C
ix.	A perfect absorber must also be a perfect	A. Radiator	B. Cavity	C. Source of radiation	D. None of these	A
x.	The unit of magnetic fluex is........	A. Weber	B. Gauss	C. Tesla	D. None of these	A
xi.	When area A is normal to the Electric field E then electric flux is	A. Maximum	B. Minimum	C. Zero	D. None of these	C
xii.	The charge of electron was determined by the effect of electric field on rate of fall of oil droplets under gravity. This was done by........	A. J.J. Thomson	B. Rutherford	C. R. Millikan	D. Einstein	C
xiii.	Which one of the given quantities remain constant in step up transformer?	A. Heat	B. Power	C. Voltage	D. Current	B
xiv.	Bottom quark carries charge.......	A. $-\frac{1}{3}e$	B. $+\frac{1}{3}e$	C. $-\frac{2}{3}e$	D. $\frac{2}{3}e$	A
xv.	1 k Wh = ...	A. 10^3 J	B. 10^4 J	C. 3.6×10^6 J	D. 746 J	C
xvi.	A photon while passing through a magnetic field is deflected towards	A. North Pole	B. South Pole	C. Is ionized	D. None of these	D
xvii.	In insulator the conduction band is......	A. Completely filled	B. Partially filled	C. Empty	D. All of these	C
xviii.	According to classical physics	A. Mass is absolute	B. Time is absolute	C. Space is absolute	D. All of these	D

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Note: Time allowed for Section – B and Section – C is 2 Hours and 40 minutes.

Section – B

Marks: 40

Q-II   Attempt any TEN parts. Each part carries FOUR marks.

1.   Water has a large dielectric constant, but it is rarely used in capacitors. Explain why?

2.   Define and explain Electric Power.

3.   Differentiate between magnetic flux and magnetic flux density.

4.   Explain the phenomenon of Self Induction.

5.   Explain why it is difficult to measure the rate of change of current.

6.   Differentiate between paramagnetic, diamagnetic and ferromagnetic materials.

7.   Explain why CE configuration is widely used in amplifier circuits.

8.   Explain why it is impossible for a particle with mass to move faster than the speed of light.

9.   What is meant by breaking radiation? Explain.

10.   Define and explain the half life of radio active element.

11.   Why rise in temperature of a conductor is accompanied by a rise in the resistance?

12.   Why does back e.m.f tend to decrease as the rate of doing work increases?

13.   Differentiate between Ionization Potential and Ionization Energy.

Section – C

Marks: 27

Note : Attempt any THREE questions. All questions carry equal marks.

Q-III   (a)   Explain the phenomenon of electric polarization account for the increase in capacitance of a capacitor when instead of air dielectric is inserted between its plates?

   (b)   Calculate the current through a single loop circuit if $\varepsilon = 120$ V, $R = 1000$ Ω and internal resistance $r = 0.01$ Ω.

Q-IV   (a)   State Ampere's Circuital Law. Find the expression for magnetic flux density at radial distance "r" from a straight wire, carrying current "I".

   (b)   A coil of 100 turns is linked by a flux of 20 m Wb. If this flux is reversed in a time of 2 ms, calculate the average e.m.f. induced in the coil.

Q-V   (a)   What is X – rays? Write down the properties of X – rays.

   (b)   Determine the activity of a 1 g sample of $_{38}Sr^{90}$ whose half life against β – decay is 28 years.

Q-VI   Write short notes on any two of the following.

   (a)   Black Body Radiation.

   (b)   Energy Band Theory.

   (c)   PN Junction.