BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-II INFORMATION TECHNOLOGY : WINTER : 2024
SUBJECT: ENGINEERING PHYSICS

Day : Saturday
Date : 07/12/2024

W-27743-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

1) All questions are COMPULSORY.
2) Figures to the RIGHT indicate FULL marks.
3) Assume suitable data WHEREVER necessary.
4) Draw neat diagrams WHEREVER necessary.

Given
Mass of electron (m_e) = 9.1×10^{-31}kg
Charge on electron (e) = 1.6×10^{-19}C
Planck's constant (h) = 6.625×10^{-34}J-s
Mass of proton (m_p) = 1.67×10^{-23}kg.

Q.1 Explain construction and working of Cathode Ray Tube (CRT). (10)

OR

Q.1 Distinguish between scanning electron microscope and transmission electron microscope. (10)
Calculate the force due to transverse magnetic field experienced by an electron revolving in an orbit of 2 cm radius and velocity 10^3cm/s.

Q.2 What are the requirements of acoustically good hall? (Any five) (10)

OR

Q.2 Explain use of ultrasonic for measurement of thickness. (10)
Find the sound intensity emitted by a sound source of 65dB ($I_0 = 10^{-16}$ watt/cm^2).

Q.3 What are the physical significance of wave functionΨ ? (10)
Calculate the difference between two lowest energy levels of an electron confined to an infinite potential well of width 3.1 A^0.

OR

Q.3 Derive the derivation for Schrodinger's time independent wave equation. (10)

Q.4 Write a note on interference due to thin film? (10)
A monochromatic light incident normally on a plane diffraction grating having 14000 lines/inch. Calculate wavelength of incident light if second order spectrum is observed at 20^0.

OR

Q.4 What is diffraction? Explain diffraction in plane diffraction grating. (10)

Q.5 State and explain: i) Huygen's theory of double refraction. (10)
ii) Discuss positive crystal.

OR

Q.5 Explain construction of optical fiber and its application in the field of communication. (10)

Q.6 Define Fermi energy level. Derive the derivation of Fermi energy level in intrinsic semiconductor at room temperature. (10)

OR

Q.6 i) State and explain Hall effect. (10)
ii) Explain any two properties of nanoparticles.

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