

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Business Systems : WINTER : 2024
SUBJECT: PHYSICS FOR COMPUTING SCIENCE

Day : Thursday
Date : 12/12/2024

W-24134-2024

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.

Constants:

$$e = 1.6 \times 10^{-19} C$$

$$m_e = 9.1 \times 10^{-31} Kg$$

$$h = 6.63 \times 10^{-34} J-s$$

$$m_p = 1.66 \times 10^{-27} Kg$$

$$N_a = 6.025 \times 10^{23} \text{ atom / gm - mole}$$

- Q.1 Form the differential equation for forced oscillation. Explain the phenomena of resonance. (10)
- OR
- Q.1 What is SHM? Give the characteristics of SHMs. (10)
- Q.2 What is double refraction? Explain it on the basis of Huygen's theory. (10)
- OR
- Q.2 What is diffraction? Give the difference between interference and diffraction. (10)
- Q.3 What is wave function? Give its physical significance. (10)
- OR
- Q.3 Derive Schrodinger's time dependent wave equation. (10)
- Q.4 What is Miller indices? Explain method to determine Miller indices. Show the Miller's plane corresponding to Miller indices: i) (111) ii) (001) (10)
- OR
- Q.4 What is packing factor? Derive the packing factor of: i) BCC ii) FCC (10)
- Q.5 With energy level diagram, explain the construction and working of Ruby laser. Why it is a pulsed laser. (10)
- OR
- Q.5 Explain the principle of light transmission through optical fiber? What are different type of optical fiber? (10)
- Q.6 Write Maxwell's equation in integer and differential form. Give significance of each equation. (10)
- OR
- Q.6 State and explain first and second law of thermodynamics. (10)
