

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-I Computer Science & Engineering-A&M : WINTER : 2023
SUBJECT : PHYSICS FOR COMPUTING SYSTEMS

Day : Monday
Date : 04-12-2023

W-27615-2023

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) Use of non-programmable calculator is **allowed**.
- 4) Assume suitable data **WHEREVER** necessary.
- 5) Draw neat diagram **WHEREVER** necessary.

Q.1 Explain the principle construction and working of S.E.M. (Scanning electron Microscope) with neat diagram. Calculate velocity of proton accelerated through potential difference of 5. K.V. (10)

OR

Q.1 Explain Electrostatic focusing with neat label diagram. Draw a Block diagram of CRO. (10)

Q.2 Explain the phenomenon of Fraunhofer diffraction at a single slit. Distinguish between positive and negative crystal. (10)

OR

Q.2 Discuss the principle, construction and working of Nicol, prism as polarized. In Neutrons Ring an experiment the diameter. It 5th ring was 0.336 cm and that of 15th ring was 0.590. cm find the radius of curvature of plano convex lens ($\lambda = 5000 \text{ \AA}$) (10)

Q.3 With neat label diagram. Explain the construction and working of He-Ne Laser Distinguish Bet? Spontaneous and stimulated emission. (10)

OR

Q.3 What is stimulated emission? Explain Three level energy system. Write medical application of LASER. (10)

Q.4 Draw a suitable diagram and derive an expression for numerical aperture of a optical fibre. A fibre has diameter of $6 \mu\text{m}$ and its core refractive index is 1.47 and cladding is 1.43. find numerical aperture and acceptance angle. (10)

OR

Q.4 Describe schematically the basic elements of optical fibre communication system Explain types of optical fibre. (10)

Q.5 Derive Schrodinger's time dependent wave equation in one dimension. (10)

OR

Q.5 State Heisenberg uncertainty principle what is wavelength of neutron having energy 0.040 eV and mass $1.6768 \times 10^{-27} \text{ kg}$ (10)

Q.6 What is Hall effect state its significance How conductivity determined by using hall effect? (10)

OR

Q.6 Draw the energy level band diagram of p-N junction in forward bias. Write construction working characteristics of solar cell. (10)
