

Private External Theory Paper (2021)

Class: B.Sc. Sem. 6th (Non-CBCS)

Max. Marks: 80

Sub: Physics (PH-601)

Time: 03 hours

Note: Attempt any four questions. Each question carries 20 marks.

Part-A

- Q.1 Describe in detail with diagram the Powder Method for X-ray diffraction. X rays of Wavelength 0.154 nm are diffracted from a crystal at an angle of 30° . Assuming that $n = 1$, what is the distance between layers in the crystal ?
- Q.2 Explain Einstein's theory for the Specific heat of solids
- Q.3 Discuss classical and quantum mechanical explanation of the Raman effect.
- Q.4 Explain Reciprocal lattice and its application to simple cubic, bcc and fcc.
- Q.5 What do you mean by Superconductivity and Meissner effect. How Type I & II Superconductors differ from each other?
- Q.6 What are different types of optical fibers? Give introduction of Critical angle of propagation, modes of propagation, Acceptance angles, Numerical aperture and Pulse dispersion in case of optical fibers.
- Q.7 Discuss various aspects of Interaction of light with matter. Also Discuss Einstein's relations.
- Q.8 What are different types of LASER? Discuss in detail He-Ne laser.