

National Institute of Technology Kurukshetra

Subject: PHYSICS-I (PHIR 11)

1st MID SEM

Time allotted: **50 Minutes.**

Max. Marks: **15**

*Attempt **All** the questions.*

1.	<p>Discuss the nature and conditions of interference obtained from division of amplitude using relevant diagrams. [5]</p> <p style="text-align: center;">OR</p> <p>Discuss the differences between Fresnel diffraction and Fraunhofer diffraction [5]</p>
2.	<p>Write down Lorentz transformation equations and prove that the length of a rod would contract in the direction of its motion. [1+4]</p> <p style="text-align: center;">OR</p> <p>Write down Inverse Lorentz transformation equations and prove that the moving clock runs slower than stationary clock. [1+4]</p>
3.	<p>Discuss the difference between Spontaneous Emission and Stimulated Emission in LASERs using relevant energy level diagrams. [5]</p> <p style="text-align: center;">OR</p> <p>Define Numerical Aperture for a Step-index optical fiber. An optical fiber has Numerical Aperture of 0.20 and cladding refractive index of 1.59. Determine the acceptance angle for the fiber in water. [2+3]</p>