

**PH-101/1843**

**B.Tech. (Semester-I) Examination-2013**

**Engineering Physics**

*Time: Three Hours*

*Maximum Marks: 150*

**Note:** Attempt questions from all these sections.

**Section-A**

**(Short Answer Type Questions)**

**Note:** Attempt any ten questions. Each question carries 4 marks.

**(2x10=20)**

- ✓ 1. ✓ Differentiate in between Inertial and non-inertial frame.
- ✓ 2. ✓ Write Einstein postulates for special theory of Relativity.
- ✓ 3. ✓ Define interference and their types.
4. Define diffraction. Sketch the intensity pattern of various maxims in diffraction due to N-slits.
5. What type of nature the light has? Is it possible to have polarized light? If yes then how?

- ✓ 6. Differentiate in between absorption and emission.
7. Sketch the cross-sectional view of an optical fibre. In what respect the inner and outer section differ?
- ✓ 8. Outline the principle of total internal reflection.
- ✓ 9. How many mirrors and plates are used in Michelson-Moreley experiment?
10. ✓ Under what circumstances the mass of a particle varies with velocity?
11. Which phenomenon took place in Bi-prism division of wave front or division of Amplitude?
12. How maxima and Minima differs? State Rayleigh's criterion for resolution of two near by objects.
13. Write essential requirements for Lasing action. How they are obtained?
- ✓ 14. Define optical activity.
15. ✓ Which material is used to manufacture an optical fibre and why?

## Section-B

(Long Answer Type Questions)

Note: Attempt any ~~three~~<sup>two</sup> questions. Each question carries **15** marks. (10x3=30)

1. Answer followings:
  - (i) Lorentz Transformation
  - (ii) Length Contraction
  - (iii) Variation of mass with velocity
2. Discuss the method to determine the wavelength of light using Bi-prism or Newtons Ring.
3. What is the Fresnal's concept for optical activity? Obtain the angle of rotation place of Polarisation based on this principle.
4. Discuss the four level scheme of LASER. Also obtain the condition for population inversion.
5. Outline the various losses and attenuation in signal propagating through an optical fibre.
6. Write a note on Holography.