PH-101/1843(N)

B. Tech. (Semester-I) Examination-2012

(Physics (Engg.)

Time: Three Hours

Maximum Marks: **50**

Note: Attempt questions from all the Sections.

Section-A

(Short Answer Type Questions)

Note: Attempt any ten questions. Each question carries 2 marks. **(2x10=20)**

1. Explain the term 'Laser'.

2. Explain the theory of production of circularly and elliptically polarized light.

$m_0 = c/\sqrt{2}$

4. A particle of rest mass mo moves with velocity $c/\sqrt{2}$. Calculate the mass, momentum, total energy and kinetic energy of the particle.

$$m = \frac{m_0}{\sqrt{1 - v^2/c^2}}$$

5. Discuss two important applications of holography.

6. Explain Rayleigh criteria of resolution.

7. Write a short note on division of wave front.

8. What do you mean by 'Double' Refraction?

9. The length of a rocket ship on the ground is 50 meter when it is in flight its length observed from the ground is 49.5 meter calculate its speed.

10. What do you mean by the term 'numerical aperture'?

11. Define 'polarization'.

12. What is meant by 'time dilation'?

13. Is earth an inertial frame? If not, why?

14. What do you mean by interference of light'?

15. Discuss various types of optical fibers.

Section-B

(Long Answer Type Questions).

Note: Attempt any three questions. Each question carries 10 marks. **(10x3=30)**

1. Define Michelson Morley experiment. How the negative results of the experiment interpreted?

2. What is relativistic energy? Prove the relation $E^2 = p^2c^2 = m_0^2 c^4$ when where 'p' is relativistic momentum.

3. What are Newton's sings? Prove that in reflected light.

   (a) Diameters of bright sings are proportional to square root of odd natural numbers.

   (b) Diameters of dark rings are proportional to square root of natural numbers.

4. Discuss the phenomenon of interference of light in thin wedge shaped film in reflected light.

5. What are Einstein's coefficients? Derive the relation between spontaneous emission and induced emission coefficients.

6. Discuss various applications of laser. Describe the working of Ruby laser.

NEWTON'S RING
DOUBLE & N-SLIT

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① → Derivation
② → Polarization
③ → Fiber
④ → Laser