PH-101/1843

B. Tech. (Semester-I) Examination–2017

Engineering Physics

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. Discuss Galilean transformation for position, velocity and acceleration.

2. State the fundamental postulates of special theory of relativity.

3. How fast would a rocket have to go relative to an observes for its length to be contracted to 99% of its length at rest?

4. What is the main condition to produce interference?

5. Explain the formation of Newton's rings.

6. What are the differences between spontaneous and stimulated emissions? Why is Spontaneous radiation incoherent?

7. Explain the phenomenon of double refraction in calcite crystal.

8. Discuss some important application of Laser.

9. What are ordinary and extraordinary rays?

10. Describe an optical fiber.

11. What is holography?

12. Calculate the thickness of a soap bubble film (refractive index=1.46) that will result in constructive interference in the reflected light, if the film is illuminated with light whose wavelength in free space is $6000\,\overset{0}{A}$.

13. A man weighs 50kg on the earth when he is in rocket ship in flight; his mass is 50.5kg as measured by an observer on earth. What is the speed of the rocket?

14. Define the time dilation.

15. What are the difference between interference and diffraction?

Section-B
(Long Answer Type Questions)

Note: Attempt any two questions. Each question carries 15 marks. (15x2=30)

1. Draw a neat diagram of He-Ne Laser and describe its method of working. What are the characteristics of laser beam? Discuss its important applications.

2. Deduce an expression for the variation of mass with velocity.

3. Describe the construction of a hicol prism. Explain how it can be used as a polarizer and as an analyser?

4. Discuss the formation of interference fringes due to a wedge shaped this film seen by normally reflected sodium light and obtain an expression for the fringes width.