PH–101/1843

B. Tech. (First Semester)
EXAMINATION, 2019
ENGINEERING PHYSICS

Time : Three Hours

Maximum Marks : 50

Note : Attempt questions from both Sections as directed.

Section—A

(Short Answer Type Questions)

Note : Attempt any *ten* questions. Each question carries 2 marks.   10×2=20

1. What is mass-energy equivalence ?

2. Explain the basic postulates of special theory of relativity.

3. Show that in the phenomenon of interference, the law of conservation of energy holds.

4. Distinguish between the Fresnel and Fraunhofer class diffraction.

5. How is a concave reflection grating superior over a plane diffraction grating ?

6. A rod of length 10 m long is moving along its length with a velocity of 0.6C. Calculate its length as it appears to an observer at rest.

7. Two coherent sources whose intensity ratio is 36 : 1 produce interference fringes. Deduce the ratio of maximum intensity to minimum intensity.

8. What do you mean by double refraction ?

9. What do you mean by population inversion ?

10. Explain the principle of holography.

11. What is the basic principle of fibre optics ?

12. Define numerical aperture.

13. What are the properties of laser radiation ?

14. What are Newton's rings ?

15. Discuss Lorentz transformations.

Section—B

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 15 marks.   2×15=30

1. Describe Michelson-Morley experiment and Physical significance of its results.

2. Describe Fresnel's Bi-prism with a neat diagram and explain how wavelength of monochromatic light is determined by it.

3. Discuss Einstein's co-efficients. Derive a relation between them.

4. (a) How does one construct and reconstruct a hologram ?

   (b) Explain acceptance angle and acceptance cone of a filter.