

## **Assignment Set for Internal Evaluation**

**Semester-II**

**Subject: Waves and Optics (CC-4)**

**Total Marks: 30**

**GrA , Theory 20**

Answer any one question from the following

1. (a) What are beats? Give an analytical description of the phenomenon of beats and show that the

beat frequency is equal to the difference between the frequencies of the component oscillations.

(b) What are the longitudinal and transverse waves? Give example for each.

(c) Explain the terms wave velocity and wave front.

Or

2. (a) Explain Huygen's principle of wave propagation and deduce from it the laws of reflection of

plane waves at plane surface.

(b) Deduce the expression for width of the interference fringes in Young's double slit Experiment.

(c) Write down the conditions for observable interference pattern.

Or

3. (a) Distinguish between Fresnel and Fraunhofer class of diffractions.

(b) Find an expression for the intensity of Fraunhofer diffraction pattern due to a single slit.

Discuss the conditions for maxima and minima.

(c) What do you understand by the term resolving power of an optical instrument? State the Rayleigh criterion of resolution.

Or

4. (a) What are stationary waves? How do they differ from progressive wave?

(b) Discuss the formation of nodes and antinodes in stationary waves when amplitudes of the

Superimposed waves are equal.

(c) Write down the Newton's formula for the speed of sound in air. How Laplace corrected the Formula?

### **Gr B , Practical 10**

1. Discuss the theory of Newton's ring, and how can you find out the wavelength using it .

Or

2. Discuss the method of finding the prism angle using spectrometer .