

# ASSIGNMENT-4

## MODULE-3 Optics

Dt: 8-4-2026

**Instruction: Do not USE content from AI for Assignment Writing. Use text/ Reference books/Handouts.**

### Remember Level

(Recall basic principles and definitions from wave optics.)

1. State Huygens' principle.
2. State the principle of superposition.
3. State the difference between interference and diffraction.
4. State Rayleigh's criterion.

### Understand Level

(Explain concepts and patterns in interference/diffraction.)

5. Explain types of interference (constructive and destructive).
6. Explain formation of Newton's rings in reflected light.
7. Describe construction and working of Michelson's interferometer.
8. Describe Fraunhofer diffraction at a single slit.

### Apply Level

(Use formulas to derive or solve optics problems.)

9. Derive fringe width in Young's double slit experiment.
10. Derive intensity expression  $I = I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \delta$  for Young's double slit.
11. Prove Newton's ring diameters (dark rings  $\propto \sqrt{\text{natural numbers}}$ ; bright  $\propto \sqrt{\text{odd numbers}}$ ) in reflection.
12. Derive resolving power of a grating.