Maulana Azad National Institute of Technology, Bhopal
Mini Test Examination, February 2025
B. Tech. Semester – II
(Session 2024-25)

Duration: 45 mins
Max. Marks: 10
Date: 27/02/2025

Subject: Physics
Subject code: PHY24102
Note: Attempt all questions

Section G

Q. No.	Questions	Marks	COs
1.	Derive the expression for the intensity distribution in the Fraunhofer diffraction pattern produced by an N-slit transmission grating. Discuss the conditions for the formation of maxima and minima.	3+2	CO2
2.	Why the fringe at the center is dark in Newton's ring experiment?	1	CO1
3.	In a Michelson interferometer experiment, a thin transparent sheet is introduced in one of the arms, causing a shift of 50 interference fringes. The experiment is conducted using monochromatic light of wavelength 600 nm. The refractive index of the sheet material is 1.5. Calculate the thickness of the thin sheet.	2	CO3
4.	A plane transmission grating has 6000 lines/cm and is illuminated with parallel beam of monochromatic light of 500 nm wavelength. Calculate: (a) The angular position of the first-order principal maxima. (b) The maximum order visible.	2	CO4