Mid Term Examination- Oct. 2024

Engineering Physics (PHYS132)

Time: 01 Hr   Maximum Marks:20

Note: The use of scientific calculator is allowed.

Section – A (Attempt any two questions, Each of 04 marks)

Q.1 A diffraction grating used at normal incidence gives a green line, $\lambda = 5400\text{Å}$, in a certain order n superimposed on a violet line, $\lambda = 4050\text{Å}$, of the next higher order (n+1). If the angle of diffraction is 30°, calculate spacing between the grating lines. Also find how many lines are there per cm in the grating.

Q.2 The diameter of 5th dark ring is 9 mm in Newton's ring experiment when sodium light ($\lambda = 5890\text{Å}$) is used. The light passes through the air film at an angle of 30° to the normal. Find the radius of the lens.

Q.3 Explain phenomenon of diffraction and distinguish Fresnel and Fraunhofer diffractions.

Section – B (Attempt any One question, 8 marks)

Q.1 What is interference of light? Explain the phenomenon of interference in thin films due to reflected light.

Q.2 Discuss the phenomenon of diffraction due to plane diffraction grating and show that when N increases, the intensity of secondary maxima decreases.

Section – C (Compulsory, 04 marks)

Q.1

White light is incident on two parallel glass plates separated by an air film of 0.001cm thickness and the reflected light is examined by the spectroscope. Find the number of dark bands seen in the spectrum between the wavelength 4×10^{-5} cm and 7×10^{-5} cm when light is incident at an angle of 30° to the normal to surfaces.