Name: Drishti Sahani 35 Student University Roll No.:	Printed Pages: 2
School of Engineering First Sessional Examination, Odd Semester (AS: 2022-23) [B. Tech: I] [Year: 2022-23] [Semester: I]	
Course Title: Physics-1 (A) Course Code: BAS 3102	Max Marks: 30 Time: 1 *Hr*

Instructions if any: Read the question Carefully.

	SECTION 'A' Q.N.1. Attempt all parts of the following:	Course Objective	Marks
a)	What are the conditions necessary to produce interference?	CO1	1
b)	What is the relation between phase difference and corresponding path difference?	CO1	1
c)	What do you mean by thin films?	CO1	1
d)	What are the differences between Fresnel's and Fraunhoffer's diffraction pattern?	CO2	1
e)	Explain the resolving power of a plane transmission grating.	CO2	1
	SECTION 'B' **Q.N.2. Attempt any two parts of the following:**	**Course Objective**	**Marks**
a)	In Newton's ring experiment, the diameter of 4^{th} and 12^{th} dark ring is 0.4 cm and 0.7 cm respectively. Find the diameter of 20^{th} dark ring.	CO1	7.5
b)	A parallel beam of light of wavelength 5890 Å is incident on a thin film of refractive index 1.5 such that the angle of diffraction is 60^0. Calculate the smallest possible thickness of the film which will appear dark by reflection?	CO1	7.5
c)	What is the highest order spectrum which may be seen with light of wavelength 6×10^{-5} cm by means of a grating with 5000 lines per cm?	CO2	7.5
d)	Calculate the minimum number of lines in a grating which will just resolve the lines of wavelength 5890 Å and 5896 Å in second	CO2	7.5

	order.		
	SECTION 'C'	**Course Objective**	**Marks**
Q.N.3. Attempt any one part of the following:			
a)	**Discuss the effect of introducing a thin plate in the path of one of the interfering beams in biprism experiment. Deduce the expression for displacement of fringes.**	**CO1**	**10**
b)	**Describe the Rayleigh's criterion for resolution. Deduce an expression for resolving power of grating.**	**CO1**	**10**
c)	**Show that the relative intensities of successive maxima for the single slit are** $1:\frac{4}{9\pi^2}:\frac{4}{25\pi^2}:\frac{4}{49\pi^2}:\ldots\frac{4}{(2n+1)^2\pi^2}$	**CO2**	**10**

Table 1: Mapping between COs and questions

(Number of COs may vary from course to course)

COs	Questions Numbers	Total Marks
CO1	1a,1b,1c,2a,2b,3a,3b	38
CO2	1d,1e,2c,2d,3c	27