GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Basic Sciences

Bachelor of Science Honours in Physics
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem IV - C1UD405T - Optical Instruments and Applications

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	What type of aberration is present lenses but absent from mirrors?	K2	(2)
2)	Define angular dispersion, dispersive power and write relation between them.	K1	(3)
3)	Show that minimum distance between an object and its real image in a convex lens is four times the focal length of the lens.	K2	(4)
4)	What is a telephoto lenses? What are the uses of telephoto lenses?	K2	(6)
5)	Two thin convex lenses of focal lengths 20 cm and 5 cm are kept coaxially separated by a distance of 10 cm. Draw the positions of the cardinal points for the combination.	K3	(6)
6)	It is desired to make a converging achromatic lens of mean focal length 30 cm by using two lenses of materials A and B. If the dispersive powers of A and B are in the ratio 1:2,find the focal length of each lens.	K3	(9)
7)	A double convex lens of focal length 20 cm shows minimum spherical aberration. If refractive index of the material of the lens is n=1.5, calculate its radii of curvature.	K4	(8)
8)	Show that the chromatic aberration in lenses is equal to the product of mean focal length and dispersive power of the material.	K4	(12)
	OR		
	Calculate the focal length of a convex lens of crown glass (dispersive power 0.012) and a concave lens of flint glass (dispersive power 0.020) so that when placed in contact they form an achromatic converging combination of focal length 30 cm.	K4	(12)