C.U.SHAH UNIVERSITY Summer Examination-2016

Subject Name: Optics

	Subject	Code: 4SC04PHC1	Branch: B.Sc. (All)	
	Semester	r: 4 Date: 18/05/2016	Time: 02:30 To 05:30	Marks: 70
	Instructio (1) U (2) I (3) I (4) A	ons: Use of Programmable calculator & a Instructions written on main answer Draw neat diagrams and figures (if 1 Assume suitable data if needed.	any other electronic instrument is book are strictly to be obeyed. necessary) at right places.	prohibited.
Q-1		Attempt the following questions	::	(14)
Atte	a) b) c) d) e) f) g) h) i) j) k) l) m) n) mpt any f	State the Fermat's Principle Define Interference. Give the formula for the focal leng State the Huygens Principle Give the definition for Zone Plate When one can say that the Rayleig Give an idea about what do you m What do you mean by secondary w Define in general the term Resolve Draw the figures for divergent and Define Corpuscles Which quantities measure the reso Write the general expression for g Define the Fresnel's Diffraction four questions from Q-2 to Q-8	gth of (n th) zone plate gh's criterion of resolution is ach nean by reflection gratings? wavelets? ing Power d convergent wavefronts. plving power of a grating and a te grating element	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Q-2	а	Attempt all questions Determine the laws of refraction a	at plane surface using Fermat's p	(14) inciple with 7
Q-3	b	figure required. Deduce the expression for resolvin Attempt all questions Discuss the method of determining	ng power of a grating with suitab g wavelength of a spectral line us	le diagram 7 (14) sing 9
	b c	transmission grating using a near of Define the term Grating? State the fundamental postulates of	diagram of the theory of light.	2 3

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Q-4		Attempt all questions	(14)
	a	Give the differences between dispersive and resolving power of a grating.	7
	b	Explain the Action of Zone Plate with suitable diagram.	7
Q-5		Attempt all questions	(14)
	a	Give the expression for resolving power of a prism, also mention the terms appearing in the same. How can you improve the resolving power of a telescope?	3
	b	How is interference different from diffraction?	4
	C	Describe Huygens theory of propagation of wave front in detail with neat diagrams.	7
Q-6		Attempt all questions	(14)
	a	Explain in detail Rayleigh's Criterion for resolution using suitable figures.	7
	b	Expalin in detail Fresnel's theory of rectilinear propagation of light with figures	7
Q-7		Attempt all questions	(14)
	a	Give the properties of ether	2
	b	Give two points of differences between prism spectrum and grating spectrum	4
	С	Give an account on Fraunhofer diffraction by double slit method using figures required.	8
Q-8		Attempt all questions	(14)
-	a	Differentiate between Transparencies and Transmission grating.	2
	b	Explain Huygens Principle with necessary diagrams.	8
	c	What do you mean by resolving power of a microscope? Draw the resultant intensity curve for two objects whose change in wavelength is very small.	4

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