	(CH-11) Jer
	Injerence of Light.
	The phenomeneon of modestribution of energy enth.
	resuctant hapt wave formed by the superbob has on time
	Inference of Light. The phenomeneon of rodistribution of energy inthe resuctant hight wave formed by the superposition of two light waves having same amblitude and frequency (or we veleng ht) is called inference of light.
	volenant) Pe collection propose and a starting (or us
	The same ingerone of the
	(0. 160 mon (1) If the amplitude of marmom (her
4	certife intensity of light is maximum), then It is colled
	Types of Inference:-(1) If the amplitude Ps maximum (her ce, the intensity of light is maximum), then It is coiled Constructive interference.
0.0	
17	Destructive enterperence: - the enterperence en which the a
	implitude and intensity of resultant wave become zero Ps
	called destructive interperence,
Sop	operent sources: Two source of light are called comed
J.	of they empt Isaht wave have same some smarred to the
	-ngth and amplitude and the two waves are in the
	some phase.
	The two sources in light
-	The said of 1914 are collect incohect
	The two source of light are colled Incohect If they are not in same sphase practically two independent
	Ultra white A4 Teacher's Signature

		Page:	1
		Date: / /	
	Source of 19ght are Properent.	I V To a To a Control of the Control	-1
			~
5.0(2)	Conditions for constructive and sectru	ictive gotor number	7
	189ht:	The ference of	*
(*)	the condition for constructive enterien	ence Ps that, the	_
	path de gerence between two waves shou	Id be z'ero or Poten	
	ral multiple of wavelength is! . Thus	The state of the s	
	X= 1/1 , n= 0, 1, 2,		
PP)	the condition for destructive Priesperence	ce Ps that, the bath)
	defference between two waves must b	e odd multiple of	1
	1, 7745	/ (/	
	2 X=(2n+1)·1:, n=0,1,2.		
	2		
SQ (3)	Why two Pndependent sources of light	leg two head IPgk	d
	of a bus) not produced entergerence (2)	047.	
An	Two Pridependent sources of 13	ght do not produce	,
,	Interjerence because they are incoherent	and production of	91
	terference requires wherent sources.	1 - { 1 +1 /1 (
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The state of the s	
50 (4) Is there veolation of law of conservation	n of energy ! expl	91
J ,	12072 120 73 COPEIX		
23	Posterperence of light. This is because k ininge is shifted to the bright ininge at energy remains the Same.	of energy on the	9
	Prierjerence of light. This is because	the energy of d	đγ
	k ininge is shifted to the bright dringe	and again the h	of
	at energy remains the same.		
		T. E. D. E. S. Santon . Se	
SPC	s) In young's double slit experiment,	how is the Aring	0
	whath altered py the separation between	+wo slits on day	٠ الم
	Dn Young's double slit experiment, whath altered pf the separation between d and the distance between slot and	screen is halvon ?	J/!
	[H14B-2068]		

Teachar's Signature.....

Ultra white A4

	5.5	8		Page:
				Date: / /
F	<u>Ans</u>	New fringe whath 21 = 10' Shere, d'= D'=	^	1.0
		al = 10' Shere, al-	2014	
\$1 		d' D'=	D	
		1		
		thus x'- 2 - one sourth of	brevious v	alue.
		thus x'= x = one jourth of	7	1
				7
	W (e) Why have the co two conferent s	ources be n	ery close to esh
	J '	other for good entergerence patter	ns (5028)	0
	<u>P</u>	other for good prierjerence patter fringe wordth of prierjere &= 10	ence pattern	Ps goven by
	+	d=10"		V
		d ,		
		thus, the slits seperation d	being invers	ely proportional
		to fringe width, the two source	e tract be	very 0,600.
		0 0		0.
	(F)	Orgeneros between ontemperance	and by d	off raction?
	Are		6 gy	Ron 9s the result
	(1)	The style result of super both - from of light waves coming from two content sources.	(1) Opprac	from 91 the rasula
<u> </u>		frong light waves coming from	· of super	position of two
		two content sources. UV	ware's c	oming from des
			_erent	boints of the same
			mane	trond.
4	(به)	Interperence bands are equally	(a) Offra	chion bands are
	d _{ing}	spaied.	hot e	equally (paced.
((3.)	boints of minimum entensity are	(a) Points	of minimumant
		berjectly dark.		re not perpectly
			dork.	
	(4)	All bright bands are of uniform	(A) All	bright bands
7		- Intensity.		t of unform
((1)	Bonds are large in number	: nter	76/14.
		U		s are secus in jumber.
		Ultra white A4		per's signature

Page:		
Date:	1	. /

Newton's rings experiment: (for numerical only) d = Dn+ m2 - An2 here, Dn=diameter of nth dark ring Newton's
Ontm= diameter of (nt/m)th dark ring ring.
R= radius of curvature of convex surface of plano convex lens. Important Numerical (2075 set B) 9-12 In Newton's ring expl: $\frac{0_f = 0.336 \text{ cm}}{R = 9}$ 1 = 5880 A° = 5880 × 10-8 cm Here, Dis = 85+10 = Dn+m where n=s NOW, d= Dn+m2=Dn2 1= D15- D52 4x10xR $R = (0.590)^2 - (0.336)^2$ 40 x 5880 x10-8 = 1 meter.

Ultra white A4

1: A

Teacher's Signature.....

		Page:
-	Imb.	Date: / /
	Young's double slpt experiment: -	The second secon
		M
		1
	1 0 0 0	A
* * 0 · ·	100	TN
	5 54 P	
	· · · · · · · · · · · · · · · · · · ·	*
	Asg (1).	screen
	10	
	Frg (1) shows experimental arran	gement of Young's
	two slit experiment. Slits Si and so an	e equalic shored
	rent source. Due to constructive and d	and act as come
	rent source. Due to constructive and d	estructive interjen
	nce of light coming from si and so on	screen alternate
	bright and dark ingres singes corpords	s) are obtained in
	11/10/06/1	
	At point Mon screen the pat	h defference between
	roys som and sim will be	
	Path difference = SiM - SIM [.	MEAM
	= 32 H + HM - SM = C	
	In DS,8, A	
	$\frac{Ain0 = I_2A - I_2A - \cdots}{S_1S_2} = \frac{S_2A}{C}$	<i>y</i>
4-2	And In a McN. tand = MN =	A. (A)
	CN CN	<u>9 (3)</u>
		Teacher's Signature

	Page:
	Date: / /
	Since O is very small
	ton 0 ~ ila a a the man a
	we get
	5,A = 4 3 S2A = 4d - (4)
	we get $S_{1}P = \frac{y}{2} + \frac{y}{2} $
	· · · · · · · · · · · · · · · · · · ·
. !	Bright fringe width (x):
	difference must be integral multiple of wave length.
	difference must be integral multiple of war length.
	Thus,
	$S_{2}A = Dd = yd = 0.1.2.$
	or, yn= n.D.) (for bright fright or maxima)
	d/ ()
	From eg & seperation between two nearest bright
	fringes will be
	d (
	Thus, $\alpha = 10$ $\gamma = 6$
	Dork Ininge width: - For parnt M to be durth, pathdiffe
	reme must be add multiple of 1. Thus.
	CA - UN - (20ti) A (unexp2 7
	$S, A = yd = (2n+1) \cdot 1 $ where $\frac{1}{2}$
	$\frac{3}{2d} \frac{(2n+1)}{2d} = \frac{1}{2n+1} - \frac{1}{2}$
	From egn (7), the distance between two powerst dark
	Iringes will be
	$\beta = \frac{y_{(2n+1)} + 2}{(2n+1)} = \frac{1}{40} \left(\frac{2n+3-2n-1}{2n+3-2n-1} \right)$
	Ulira white A4 d Teacher's Signature
	Ultra White A4 d

	Page: Date: / /
	From equs (7) and (8) we see that the bright and do
	or fringes are of equal width.
Û	Numericals:
(2068 A.	Two slits space our mm about one place 75 cm fromo 2) Screen what Ps the distance between the second and
(2000 yr	2) street what is the distance between the amon unto
11	third lines of the interence pattern on the screen when Slits are illuminated with monochromen's light of wave
	that are fluminated with monochromanic light of wave
	tength 500 nm?
	Given;
	1n two slit expt d= 0.45mm= 0.45x10-3 m
	0=0.75m
	\$= ? distance between second and third dark langs d=500nm = 500 × 10-9 m.
	80ln_
	B=10 = 500 x 10-9 x 0. 75
	d 0.45x10-3
	= 8.3*10^4 m
	= 8.3*10^4 m M Her
(a)	
(30000)	In a young's slits experiment i the separation of four brin
2068 4.12	gth strages to a sman when the wavelength used by 6.27
	10-10 m: the dictance from the slits to the screen Pr 0.80
	In a youngly slits experiment, the separation of four bing gth singes Ps & smin when the wavelength used Ps 6.2% 10-7 m. The dictance from the slits to the screen Ps 0.80 m. calculate seperation of two slits?
	· · · · · · · · · · · · · · · · · · ·
	given
	In two slit expt.
	Yn = separation of 4 bright Image = 2.5 mm
	In two slit expt. Yy = Separation of 4 bright Images = 2.5 mm = 2.5 x 10-3 m
	$d = 6.2 \times 10^{-9} \text{ m}$
Language of the state of the st	Ultra white 200 Teacher's Signature
Both Charlet	Ollia Willia

		Page:		j
		Date:	1 1	j
	d = ? Slits separation.			
	foln;			
	Yn= 110			
	d.			
	1. 44 = 410			
	d			
	- · d= 410 = 4x6.2x16-7x0-8			
	- · d= 410 = 4x6.2x16-7x0-8			
	= 793.6x10-× m.			
3)	In a young's double slit experiment the	1969	ration	n belw
067 (6·t) ear first and sayth brigh fringes Ps 2.5 mm	$n - \omega h$	en +	he arm
	In a young's double slit experiment the s) can first and south brigh fringes is 2.5 mm length of light used is 6.2 x 10-4 mm. The slits to the screen is 80 cm. Colculate the	distar	e n	non the
	sits to the screen Ps 80 cm. colculate th	و هو	era Hi	on of
	two clits?			U
	Here			
7	Givon			
	In two slit expt seperation between first	- ord	fine	bright
	fringe = (45-41) = 2.5x10-3m.		<i>B F</i>	U
	D = 0-80m			
	d= 6.2 x10-4 mm			
	= 6.2×10-7 m.			
	d = ? slit separation.			
	doln_			
•	(45-71) = 510 = 00. 10 = 410			
	d d d			
	-'-d= 410			
	(95-41)			
	= 4x 6.2x10-7 x 0.8			
	2.5×10-3	1		
1910	- (8x104) meter.			
THE RESIDENCE OF THE PARTY OF T				The state of the s

_	
4) 1	n young's expt the distance centre to tenth bright pringe in either side is 30.44 cm. Destance between sitts dindition streen is 2m. If 1 = 5.89 x 10 -7 m; determine sitt separation and the angle made by the central bright pringe at the slit (2060)
0	n either side is 30.44 cm. Destance between sitts and the
	Green is 2m. If 1 = 5.89 x 10 -7 m; determane slit separation
0	on and the angle made by the central bright fringe at the
	3/1+ (2060)
	color color
	(9) Y10 = 10AD
	d d
	$3 \cdot 44 \times 10^{-2}$
	410 3·44x10-2
	$= (3.42 \times 10^{-4}) \text{ motor.}$
ìì)	
	·· 0 = dp 0 0
	d·Ø D
	$=1$ = 6.89×10^{-9} = 1.72×10^{-3} radian
	J. 42x10-4
	75
(5)	The separation between the consecutive dark innges and young's double slit experiment as 1 mm. The screen les placed at a distance of 2m from slits & 1.0 mm separation. What as the wavelength of light used an experiment given,
!)ડબ€	young's double slit experiment is I mm. The screen
	ves blaced at a distance of 2m from slits & 1.0 mm sepa
	and congt is the wavelength of light used in experiment
=)	
	B=Sman width at don his
	P=fringe width of dort fringe = 1 mm
	D=2 meter
	d= Slits seperation= 1mm= 10-3 m
	d=? wavelength
	Soln
tr Rez	Ultra white A4 Teacher's Signature

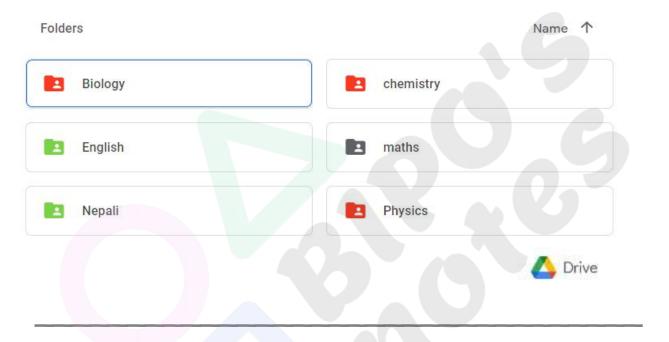
=10-6.x10-6=0.5x10-6m.

= 5x10-7 m.

Bipin Khatri

(Bipo)

Class 12 complete notes and paper collection.



Feedbacks:

admin@bipinkhatri.com.np | bipinkhatri.ram@gmail.com

Contact:





