Name- Hitendra Sisodia SAP Ide 5000 9190

Page No.:		
Date:		YOUVA

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	Experiment 25
*	A'm! - NE and a me a de de de man de man
	To find the numerical apenture of a
	given rophic tibre and hence to find
	is acceptance angle.
-	
6 ×	Material Required!
	Ouput unit, Detector, fiber stand, fiber,
	Concentrator, Emitter.
	The state of the s
**	Theory:
L ,	
	Optical fibers and fine transparent
;	glass or plastic fibers which can
	propogate light. They work under
	the principle of Total (interval) & internal
	reflection from diameterically opposite walls.
	Ve a l · O
	In this way light can be talun any where because fibers have enough
1	frenibility.
	This property makes them suitable for
	This property makes them suitable for data Communication, design of fine and oscopes, micro signed microscope etc.
	endoscopes, micro signed microscone
	ete.
	An ophic fibre Consist of core which
	Surrounded by cladding guides the
	Surrounded by cladding guides the light within the core
5 (5 A) (1 (V)	

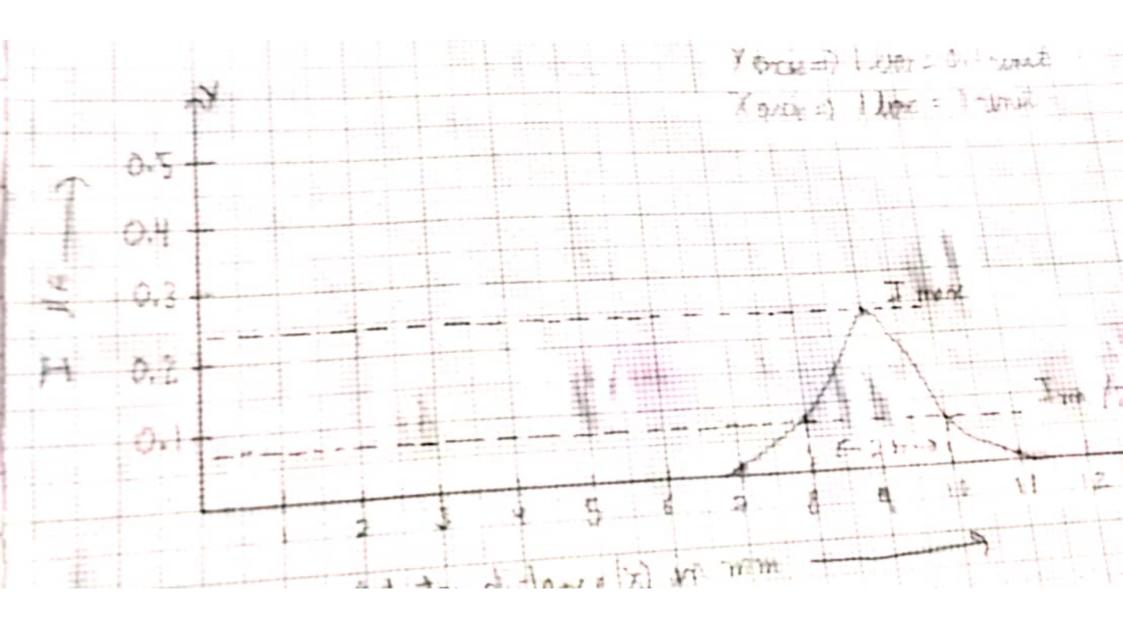
	Date: YOUVA
	gince light is quided through the
	gince light is guided through the fiber it is sometimes called an
	oppical wave guide.
	The Basic Construction of apprical fibre
	13. 8horn below.
	N2) N, 1
W. 0	Core Jasania Lord Taradii
	Cladding
	Cladding Cladding diameter
	the said and the s
	() cladding. (Mi)
	Core (Hz)
X is	This mount that to be quide the
Walter	In order to understand the propagation
	of light through an optical fibre consider
1991	the diagram given below.
	the acceptance and the first
	cladding
0	What is an office to an educate of the order
	Core. By Bibre axis.
	On Propagation of light
	O Propagation of light in Optical fibre.
)	Consider a light rays entering The conc
-	cut as point
	constill reaches the
	cladding boundary at point B.
	0 0 40
2)	As In the light ray intersects in
•	DNI.OCICA DU
	Into the core to travel on to point.

AVION	Page No.: Date: YOUVA
	At a provide book of theory a the
3)	The Total internal reflection take place.
	Total internal reflection occur only
	when the angle of invidence is
	greater than the cinical angle.
	J J J J J J J J J J J J J J J J J J J
4)	When this ray interscates the core claddy
	boundary, angle of intersection is too
	large, so reflection back into the con
	not take place and the light ray
1	115 lost in cladding.
	115 lost in cladding.
5)	This means that to be guided through
and.	on ophic fibre, and light ray must
	enter to the core with an angle
	less than an particular angle called
	the acceptance angle of the fibre.
	A ray which enhas the fibre with
	an angle greates an acceptance angle
: ?	will lust in cladding.
* *	Consider on optical fiber howing
. 5-T	a core of repractive index in, and
	cladding of refroctive index n let
	the incident light makes an angle
	i with the core axis was shown
	cladding ()
	Cladding + 4//////

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come of no gartier from	0-1		to motion	
gorhin	- (5) 45	Comment of	12/10	
ling	A. 17.			
		an Olivia	M.M.	
		///	1 1	
Then the ligh	t gets	rettected	at ar	unale
Thus the light of and full intenface of	on the	core c	ladding	
Intenface o	it angle	where,	b. Am	
Treat and the first of the association and				
Q =	90 -0	(D)	, h	<u> </u>
By snell's law	· at a	point of	t color	unce
of light in	to the rue	ophical	fibre	we
get,	- + D - + D	to the he	n har	-
no sini	- n, sina.	(Z)	2000	
where no,				<i>t</i>
medium and				
outside the	op hical	tibre.	. 4 .	J
Asserted on	Colis Foore	1 1 1000	1 0 5	A. A.
The critical an	gle is	that ang	1e of	
incidence in	denser	medium	Cni	for
which angle o	of refract	sion beco	me 9	O .
Using Snell's	law of	core cl	adding	
interface.		×		
1 01	- C1	90		- 3
n, sind	$c = n_2 Sin$	10(T)	8:09	0217
Sind	$\frac{1}{C} = \frac{n_2}{n_1}$			
		Ar.		

	M T W T F S S Page No.: Date: YouvA
	termed as the numerical aperchase (NA) From Eq 10
	(ALA) From Eq D
	3. (4. T) 그리아 있다
	NA = No sin i'm = n, sin Q = n, sin (90-Q) NA = n, cus o'c = n, \(\int \langle - \text{Sin}^2 \text{O'c} \)
	NA = n, cuso'c = n, /1-8:n20'c
971276	From Eq (2) Sin Q'C = D2
	thanks on a service of the service o
	Therefore, $NA = n_1 \sqrt{1 - n_2^2}$ n_1^2
	V 2
	$MAz \sqrt{n_2^2-n_2^2}$
a	with the true of the court of agree
	Numerical aperature is defined as the
	Sine of the half of the angle of
	fibre light acceptance come ie. NA 2
	fibre light acceptance conc. ie. NA 2 Sin Da where Dais called acceptance
	- Core angle
4	A Coreal angle. In the miles
	Let the 3pot size of the beam at
	a distance d (distance behuces the
	fibre and detector) as the radius of
~ C	The spot (5), when,
	Cohord and the of the Roman Acceptance of the
	Sind = 7
	$\sqrt{r^2+d^2}$
	등 사이 경영하는 경기에 생각하는 동안 마스크로 전환되었다고 한다고 함께 있는 것이다. 그는 그는 것이다는 것이 되었다는 것이다는 것이다는 것이다. 전 경영화에는 전 경기에 발생되었다는 것이다는 것이 함께 생각하는 것이 없는 것이다.
	1, 3, 1, 1, 2, 1, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
The state of the s	

	bservation Table:		Las Commencial Define
No.	Distance nmm	Correct was	_
Ling and manufacture	2mm	0.00503	
	8 mm	0-08427	
, 1	9mm one	0-20391	
	lomm	0-07592	
5	1/mm	0-00735	
			-



* Calculations: Distance between the fiber and the detector (d): 3 mm. Radius of Sport (r): = 5 mm. Numerical Apenature: Sing. T Sing: 5 \[\frac{5}{\sqrt{2}} \] Sing: 5 \[\frac{5}{\sqrt{2}} \] Acceptance angle, Q: Sin-1 (r) \[\frac{7}{\sqrt{2}} \] * Result: Numerical apenature of the apple fibrits 5/\sqrt{3}4. Angle of acceptance is Sin-1 (\frac{5}{\sqrt{3}4})	A	Page No.:
Distance between the fiber and the detector (d) = 3 mm. Radius of Sport (r) = =5 mm. Numerical Apenature = Sind = T Sind = 5 \[\sin\text{32} \] Sind = 5 \[\sin\text{34} \] Acceptance angle, Q = Sin-1 (r) \[\sin^2 \text{132} \] Result:- Numerical apenature of the appic fibre is 5/\sqrt{34}.	· Aller	Date: You,
Distance between the fiber and the detector (d) = 3 mm. Radius of Sport (r) = =5 mm. Numerical Apenature = Sind = T Sind = 5 \[\sin\text{32} \] Sind = 5 \[\sin\text{34} \] Acceptance angle, Q = Sin-1 (r) \[\sin^2 \text{132} \] Result:- Numerical apenature of the appic fibre is 5/\sqrt{34}.		
Distance between the fiber and the detector (d) = 3 mm. Radius of Sport (r) = =5 mm. Numerical Apenature = Sind = T Sind = 5 \[\sin\text{32} \] Sind = 5 \[\sin\text{34} \] Acceptance angle, Q = Sin-1 (r) \[\sin^2 \text{132} \] Result:- Numerical apenature of the appic fibre is 5/\sqrt{34}.	*	Ca (autations:
Radius of Sport (r) = = 5 mm. Numerical Apenature = $\frac{5}{5^{2}}$ in $\frac{3}{5^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Acceptance angle, $\frac{5}{5^{2}}$ is $\frac{5}{5^{2}}$ in $\frac{5}{5^{2}}$ i	g a transmit program de l'intermentation de l'imperient de recent	
Radius of Sport (r) = = 5 mm. Numerical Apenature = $\frac{5}{5^{2}}$ in $\frac{3}{5^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Acceptance angle, $\frac{5}{5^{2}}$ is $\frac{5}{5^{2}}$ in $\frac{5}{5^{2}}$ i	Angeles as seen heavily (new or postary transfer excel)	Distance between the fiber and
Radius of Sport (r) = = 5 mm. Numerical Apenature = $\frac{5}{5^{2}}$ in $\frac{3}{5^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Sin $\frac{5}{5^{2}}$ is $\frac{5}{3^{2}}$ Acceptance angle, $\frac{5}{5^{2}}$ is $\frac{5}{5^{2}}$ in $\frac{5}{5^{2}}$ i		fr. Setcom= (d) = 3 mm.
Numerical Apenahure = Sind . T Sind = 5 \[\sigma^{5^2}t^{3^2} \] Sind = 5 \[\sigma^{5^2}t^{3^2} \] Sind = 5 \[\sigma^{13}4 \] Acceptance angle, Q = Sin-1 (\(\gamma^{2}\)triangle \[\frac{7^2}{7^2}t^{3^2} \] ** Result:- Alumerical apenahure of the optic fibrilis 5/\(\sigma^{3}\)4.		
Numerical Apenahure = Sind . T Sind = 5 \[\sigma^{5^2}t^{3^2} \] Sind = 5 \[\sigma^{5^2}t^{3^2} \] Sind = 5 \[\sigma^{13}4 \] Acceptance angle, Q = Sin-1 (\(\gamma^{2}\)triangle \[\frac{7^2}{7^2}t^{3^2} \] ** Result:- Alumerical apenahure of the optic fibrilis 5/\(\sigma^{3}\)4.	-	0 1 0 1 (x) 5 mm
Numerical Apenahure = Sind = T Sind = 5 \[\sigma \frac{5}{\sigma^2} \] Sind = 5 \[\sigma \frac{5}{\sigma^2} \] Acceptance angle , Q = Sin-1 (\gamma \frac{7}{\sigma^2} \) = Sin-1 (\frac{5}{\sigma^2} \) Result: Alumerical apenahure of the optic fibratis = 5/\sigma^4.		pagins of sport (1) = 2 3 1.111.
Sin0: $\frac{5}{\sqrt{5^2 t 3^2}}$ Sin0: $\frac{5}{\sqrt{5^2 t 3^2}}$ Sin0: $\frac{5}{\sqrt{3^4}}$ Acceptance angle, $Q = Sin^{-1}$ ($\frac{r}{\sqrt{r^2 + d^2}}$) = Sin^{-1} ($\frac{5}{\sqrt{3^4}}$) Result:- Numerical apenature of the applic fibralis $5/\sqrt{3^4}$.		
Sin0: $\frac{5}{\sqrt{5^2 t 3^2}}$ Sin0: $\frac{5}{\sqrt{5^2 t 3^2}}$ Sin0: $\frac{5}{\sqrt{3^4}}$ Acceptance angle, $Q = Sin^{-1}$ ($\frac{r}{\sqrt{r^2 + d^2}}$) = Sin^{-1} ($\frac{5}{\sqrt{3^4}}$) Result:- Numerical apenature of the applic fibralis $5/\sqrt{3^4}$.		Numerical Aperature = 2nd
Sind 2 5 \[\sqrt{34} \] Acceptance angle, & = Sin-1 (\gamma \sqrt{\tau^2 + \d2}) \] = Sin-1 (5) \[\sqrt{34} \] * Result:- Alumerical apenature of the applic fibralis 5/\sqrt{34}.		- 1-1-42
Sind 2 5 \[\sqrt{34} \] Acceptance angle, & = Sin-1 (\gamma \sqrt{\tau^2 + \d2}) \] = Sin-1 (5) \[\sqrt{34} \] * Result:- Alumerical apenature of the applic fibralis 5/\sqrt{34}.		Sin0 = _5
Sind 2 5 \[\sqrt{34} \] Acceptance angle, & = Sin-1 (\gamma \sqrt{\tau^2 + \d2}) \] = Sin-1 (5) \[\sqrt{34} \] * Result:- Alumerical apenature of the applic fibralis 5/\sqrt{34}.		$\sqrt{5^2 + 3^2}$
Sind 2 5 \[\sqrt{34} \] Acceptance angle, & = Sin-1 (\gamma \sqrt{\tau^2 + \d2}) \] = Sin-1 (5) \[\sqrt{34} \] * Result:- Alumerical apenature of the applic fibralis 5/\sqrt{34}.		
Acceptance angle, Q = Sin-1 (\ \(\frac{7}{7^2 + d^2} \) = Sin-1 (5) \[\frac{5}{\sqrt{34}} \] Result:- Mumerical apenature of the applic fibralis 5/\sqrt{34}.		
Acceptance angle, Q = Sin-1 (r / \(\frac{7^2 + d^2}{5}\) = Sin-1 (5) Result:- Numerical apenature of the apric fibralis 5/534.		
Result:- Alumerical aperature of the optic fibration of the spice of		
Result:- Alumerical aperature of the optic fibration of the spice of	*	
Result:- Alumerical aperature of the optic fibration of the spice of		Acceptance angle, a sin'
Result:- Alumerical aperature of the optic fibration of the sprice of the optic fibration of the sprice of the spring of the sprice of the sprice of the spring of the sp		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
** Result:- Numerical aperature of the optic fibration is 5/534.		
Numerical aperature of the optic fibration		(534)
Numerical aperature of the optic fibration		
Numerical aperature of the optic fibration	*	Result:
그의 실행되는 사람들이 되어 그렇지만 그렇게 하는데 하는데 얼마나 하는데 그 그 그는데 그는데 그를 보는데 하는데 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보다면 그를 보다면 보다면 그를 보다면 그를 보		
그의 실행되는 사람들이 되어 그렇지만 그렇게 하는데 하는데 얼마나 하는데 그 그 그는데 그는데 그를 보는데 하는데 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보다면 그를 보다면 보다면 그를 보다면 그를 보		Alumenical assemble of the
그의 실행되는 사람들이 되어 그렇지만 그렇게 하는데 하는데 얼마나 하는데 그 그 그는데 그는데 그를 보는데 하는데 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보는데 그를 보다면 그를 보다면 그를 보다면 보다면 그를 보다면 그를 보		is 51.54
Angle of acceptance is sind (5)		그리에 가는 사람들은 그리는 것이 되는 사람이라면 되고 가는 것이 되었다. 그는 그는 그를 보고 있어요 된 사람들은 것이 되었다.
mgle of acceptance is singles of singles		
V3y /		ringle of acceptance is sint/5)
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		경기 등 등 사용하는 경기 등 생각이 되었다. 그는 사용하는 사용하는 사용하는 사용하는 사용하는 사용하는 사용하는 사용하
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