Progress

NPTEL » Fiber Optics

Course outline

course work?

Week 1

Week 2

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Week 3

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Text Transcripts

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FEEDBACK

1 point

Unit 3 - Week 2

How does an NPTEL online

Transmission Characteristics -

Transmission Characteristics -

Transmission Characteristics -

O Propagation in Infinitely Extended Dielectric

EM Waves in Dielectrics

Ouiz: Assignment 2

Solution : Assignment 2

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.	Due on 2020-02-1	2, 23:59 IS1
1) Which one is true for an elliptically polarized wave? (Given: a and b are constants; $a \neq b$)		1 p
$E_x = a \cos \omega t, E_y = a \cos \omega t$		
$E_x = a \sin \omega t, E_y = a \cos \omega t$		
$E_x = b \sin \omega t, E_y = a \sin \omega t$		
$E_x = a \cos \omega t, E_y = b \sin \omega t$		
No, the answer is incorrect. Score: 0		
Accepted Answers:		
$E_x = a \cos \omega t, E_y = b \sin \omega t$		
2) If the fiber loss in a link is 10 dB, then what would be the output power (dBm) for 25 dBm in	nput power?	1 p
-10 dBm -10 dBm -15 dBm	nput power?	1 pc
○ -10 dBm ○ 10 dBm	nput power?	1 pc
-10 dBm 10 dBm 15 dBm -20 dBm	nput power?	1 pc
-10 dBm 10 dBm 15 dBm -20 dBm	nput power?	1 pc
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0	nput power?	1 p
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers:		
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers: 15 dBm 3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.5		
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers: $15 dBm$ 3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.5 $= 1.7 dB/km$, $\lambda_0 = 850 nm$)		
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers: 15 dBm 3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.5 = 1.7 dB/km, λ ₀ = 850 nm) 0.07 dB/km		
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers: 15 dBm 3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.5 = 1.7 dB/km, λ ₀ = 850 nm) 0.07 dB/km 0.15 dB/km		1 pc
-10 dBm 10 dBm 15 dBm -20 dBm No, the answer is incorrect. Score: 0 Accepted Answers: 15 dBm 3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.5 = 1.7 dB/km, λ ₀ = 850 nm) 0.07 dB/km 0.15 dB/km 0.52 dB/km		

	$E_x = a \cos \omega t, E_y = a \cos \omega t$	
	$E_x = a \sin \omega t, E_y = a \cos \omega t$	
	$E_x = b \sin \omega t, E_y = a \sin \omega t$	
	\bigcirc	
	$E_x = a \cos \omega t, E_y = b \sin \omega t$	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: $E_x = a \cos \omega t$, $E_y = b \sin \omega t$	
	2) If the fiber less in a link is 10 dD, then what would be the output newson (dDm) for 25 dDm input newson?	1 naint
	2) If the fiber loss in a link is 10 dB, then what would be the output power (dBm) for 25 dBm input power?	1 point
	○ -10 dBm ○ 10 dBm	
	○ 15 dBm	
	○ -20 dBm	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: 15 dBm	
0	3) Attenuation coefficient due to Rayleigh scattering in fused silica glass fiber at wavelength 1.55 μ m will be (given $a_0 = 1.7 \ dB/km$, $a_0 = 850 \ nm$)	1 point
	○ 0.07 dB/km	
	○ 0.15 dB/km	
	○ 0.52 dB/km	
	O 0.95 dB/km	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: 0.15 dB/km	
	4) An electromagnetic wave is propagating in free space in z-direction. if the electric field is given by $\vec{E} = A \cos(\omega t - kz) \hat{x}$, where $\omega = ck$ then the	1 point
c	corresponding magnetic field is given by	. ,
	$\vec{B} = -Ac \cos(\omega t - kz) \hat{y}$	
	$\vec{B} = Ac \cos(\omega t - kz) \hat{y}$	
	$\vec{B} = -(A/c)\cos(\omega t - kz)\hat{y}$	
	$\vec{B} = (A/c)\cos(\omega t - kz)\hat{y}$	
	No, the answer is incorrect.	
	Score: 0 Accepted Answers:	
	$\vec{B} = (A/c)\cos(\omega t - kz)\hat{y}$	
	5) The bit rate-length product of an optical fiber would be larger if we	1 point
	increase the numerical aperture	
	decrease the numerical aperture	
	increase the core diameter	
	O decraese the core diameter No, the answer is incorrect.	
	Score: 0	
	Accepted Answers: decrease the numerical aperture	
	6) Calculate the Bit rate-length product for a fiber with $n_1 = 1.5, n_2 = 1.477$	1 point
	12.8 Mb/s - km	•
	○ 12.8 Gb/s - km	
	○ 12.8 Mb/s - m	
	12.8 Kb/s - m	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: 12.8 Mb/s - km	
	7) 55 μW optical power from a laser diode at 1064 nm is launched into an 8 km long fused silica glass fiber. Assume that Rayleigh	1 point
S	cattering is the only loss mechanism at 1064 nm wavelength. Find the output power approximately. ($\alpha_0 = 1.7 \ dB/km$, $\lambda_0 = 850 \ nm$)	
	$10~\mu W$	
	$34~\mu W$	
	Ο 21 μW	
	$15~\mu W$	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: $15~\mu W$	
	8) The approximate value of pulse broadening per km, in a multimode step-index fiber with $n_1 = 1.5$, $\Delta = 0.015$ will be	1 point
	○ 16 ps ○ 71 ps	
	○ 16 ns	
	○ 78 ns	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: 78 ns	
c	9) An impulse after travelling through 200 m length of the parabolic index multimode fiber with $n_1 = 1.5$, $\Delta = 0.015$ will becomes a pulse fduration	1 point
	○ 109 ps	
	○ 119 ps	
	250 ns	
	O 205 ns No, the answer is incorrect.	
	No, the answer is incorrect. Score: 0	
	Accepted Answers: 119 ps	
	10) Consider an LED source at $\lambda = 850 nm$ with a spectral width of 50 nm. Calculate the broadening in 5 km due to material dispersion in a fused	1 point
S	ilica glass. (Given $\frac{d^2n}{d\lambda^2} = 0.0297 \ \mu m^{-2}$)	. pont
	○ 11 ps	
	○ 11 ps ○ 21 ps	
	0 11 ns	
	21 ns	

No, the answer is incorrect. Score: 0

Accepted Answers: 21 ns