

Program: BE Electronics & Telecommunication Engineering

Curriculum Scheme: Revised 2016(Choice based)

Examination: Fourth Year Semester VII

Course Code: ECC703 and Course Name: Optical Communication

Time: 1 hour

Max. Marks: 50

=====

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	When the fiber core is so small that only light ray at 0° incident angle can stably pass through the length of fiber without much loss, this kind of fiber is called _____ fiber
Option A:	Cylindrical fiber
Option B:	single mode
Option C:	Multimode fiber
Option D:	Graded index fiber
Q2.	An optical fiber has core-index of 1.480 and a cladding index of 1.478. What should be the core size for single mode operation at 1310nm?
Option A:	7.31 μ m
Option B:	8.71 μ m
Option C:	5.26 μ m
Option D:	6.50 μ m
Q3.	A multimode fiber has refractive indices $n_1 = 1.15$, $n_2 = 1.11$ and an operating wavelength of 0.7 μ m. Find the radius of curvature?
Option A:	8.60 μ m
Option B:	9.30 μ m
Option C:	9.1 μ m
Option D:	10.2 μ m
Q4.	A silica optical fiber has a core refractive index of 1.5 and cladding refractive index of 1.47. What is the Numerical Aperture of fiber?
Option A:	0.30
Option B:	0.86
Option C:	0.13
Option D:	0.74
Q5.	Which of the following is not a metallic impurity found in glass in extrinsic absorption?

Option A:	Fe ²⁺
Option B:	Fe ³⁺
Option C:	Cu
Option D:	Si
Q6.	How the potential macro bending losses can be reduced in case of multimode fiber?
Option A:	By designing fibers with large relative refractive index differences
Option B:	By maintaining direction of propagation
Option C:	By reducing the bend
Option D:	By operating at larger wavelengths
Q7.	The dispersion method which is caused by the difference in the propagation times of light rays that take different paths down a fiber is known as
Option A:	Chromatic Dispersion
Option B:	Multimode Dispersion
Option C:	Material Dispersion
Option D:	Polarization Mode Dispersion
Q8.	The internal quantum efficiency of LEDs decreasing _____ with _____ temperature.
Option A:	Exponentially, decreasing
Option B:	Exponentially, increasing
Option C:	Linearly, increasing
Option D:	Linearly, decreasing
Q9.	The phenomenon occurring when the electron and photon population within the structure comes into equilibrium is known as _____
Option A:	Auger recombination
Option B:	Inter-valence band absorption
Option C:	Carrier leakage
Option D:	Relaxation oscillations
Q10.	Population inversion is obtained at a p-n junction by _____
Option A:	Heavy doping of p
Option B:	Heavy doping of n
Option C:	Light doping of p
Option D:	Heavy doping of both p-type and n-type material
Q11.	Which feature of an optical isolator makes it attractive to use with optical amplifier?
Option A:	Low loss
Option B:	Wavelength blocking
Option C:	Low refractive index
Option D:	Attenuation
Q12.	Which one of the following is not true about SONET?
Option A:	frames of lower rate can be synchronously time-division multiplexed into a

	higher-rate frame
Option B:	multiplexing is synchronous TDM
Option C:	all clocks in the network are locked to a master clock
Option D:	STS-1 provides the data rate of 622.080Mbps
Q13.	Transmitter power -3 dBm, Min Detectable power -40 dBm . Find max permissible power loss. Neglect splice and connector losses.
Option A:	47 dB
Option B:	42 dB
Option C:	40 dB
Option D:	37 dB
Q14.	_____ is defined as a process by which the wavelength of the transmitted signal is changed without altering the data carried by the signal.
Option A:	Wavelength Splitting
Option B:	Wavelength conversion
Option C:	Attenuation
Option D:	Sigma management
Q15.	_____ is the stimulation of oxide formation by means of non-isothermal plasma maintained at low pressure in a microwave cavity surrounding the tube.
Option A:	Outside Vapor Phase Oxidation (OVPO)
Option B:	Vapor Axial Deposition (VAD)
Option C:	Modified Chemical Vapor Deposition (MCVD)
Option D:	Plasma-activated Chemical Vapor Deposition (PCVD)
Q16.	Calculate coupling ration, if input optical power is 200uwatt. And output at the other three ports are $p_1=95\text{uwatt}$, $p_2=85\text{uwatt}$ and $p_3=\text{nwatt}$.
Option A:	47.22%
Option B:	49.45%
Option C:	50.45%
Option D:	51.25%
Q17.	_____ is superior as compared to _____.
Option A:	TWA, FPA
Option B:	FPA, TWA
Option C:	EDFA, FPA
Option D:	FPA, EDFA
Q18.	_____ are created by using an intense ultraviolet (UV) light-fringe pattern to inscribe the periodic variation of refractive index into the core of a photosensitive optical fiber.
Option A:	Circulator
Option B:	Connector
Option C:	FBG
Option D:	OTDR
Q19.	Which method determines the dispersion limitation of an optical link?

Option A:	Link power budget
Option B:	Rise time budget
Option C:	point to point link
Option D:	link parameters
Q20.	Circuit used to amplify the optical signal in fiber optics communications links.
Option A:	Attenuator
Option B:	Optical repeater
Option C:	Optical amplifier
Option D:	Generator
Q21.	The 10-90% rise times for components used in D-IM analog optical link is given. (LED=10ns, Intermodal=9ns/km, Chromatic=2ns/km, APD = 3ns). Link is of 5km. Determine the total rise time.
Option A:	62ns
Option B:	53ns
Option C:	50ns
Option D:	52ns
Q22.	Determine the value of acceptance angle for fiber $n_1=1.5$ and $n_2=1.47$
Option A:	71.4
Option B:	17.4
Option C:	25.6
Option D:	26
Q23.	The fiber in which, refractive index of the core is made to vary gradually such that it is maximum at the center of the core, and goes on decreasing as we move towards core cladding interface is called as:
Option A:	Step index fiber
Option B:	Single mode fiber
Option C:	Multimode Fiber
Option D:	Graded index fiber
Q24.	In time domain dispersion measurement method, fiber is generally cut back to the lesser of _____ of its original length.
Option A:	1 m or 0.1%
Option B:	20 m or 1%
Option C:	10 m or 1%
Option D:	20 m or 2%
Q25.	The SOA is based on the conventional semiconductor laser structure where the output facet reflectivities are between _____.
Option A:	30 and 45%.
Option B:	40 and 45%.
Option C:	30 and 35%.
Option D:	30 and 40%.