

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: ETC703 and Course Name: Optical Communication & Networks

Time: 1 hour

Max. Marks: 50

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File Name: **1210_R12_EXTC_VII_ETC703_QP4**

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

Q1.	In an optical fiber, the concept of Numerical aperture is applicable in describing the ability of _____
Option A:	Light Collection
Option B:	Light Scattering
Option C:	Light Dispersion
Option D:	Light Polarization
Q2.	In a step-index optical fiber, parameters given are $n_1 = 1.45$, $n_2 = 1.444$, core radius = 4.2 μm , and operating wavelength of 1550 nm. Find the acceptance angle of the fiber (in degrees)?
Option A:	5.21
Option B:	15.14
Option C:	7.57
Option D:	43.60
Q3.	In optical fiber communication, the total internal reflection occurs when
Option A:	The angle of incidence is greater than the Brewster angle with E field perpendicular to the plane of incidence.
Option B:	The angle of incidence is equal to the Brewster angle with E field parallel to the plane of incidence
Option C:	The angle of incidence is greater than the critical angle with the wave moving from a rarer medium to a denser medium
Option D:	The angle of incidence is greater than the critical angle with the wave moving from the denser medium to a rarer medium
Q4.	What is the value of core refractive index if the N.A = 0.35 and relative refractive index difference is 0.01?
Option A:	1.48
Option B:	2.48
Option C:	1.75
Option D:	2.75

Q5.	Which of the following fiber fabrication method do not support soot formation process?
Option A:	VAD
Option B:	OCVD
Option C:	PCVD
Option D:	MCVD
Q6.	A graded index fiber has a core with a parabolic refractive index profile which has a diameter of 50 micrometer . The fiber has a numerical aperture of 0.2. Estimate the total number of guided modes propagating in the fiber when it is operating at a wavelength of 1 micro meter.
Option A:	247
Option B:	493
Option C:	329
Option D:	197
Q7.	What will be the splicing attenuation for 16 km optical length using the fiber with splices at 2 km intervals each giving attenuation of 1.6 db.
Option A:	15.7 dB
Option B:	13.2 dB
Option C:	10.65 dB
Option D:	11.2 dB
Q8.	A non-reciprocal multiport passive device that directs light sequentially from port to port in one direction in a close loop is known as _____
Option A:	Circulator
Option B:	Connector
Option C:	Coupler
Option D:	Isolator
Q9.	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
Q10.	Which equations are best suited for the study of electromagnetic wave propagation?
Option A:	Maxwell's equations
Option B:	Allen-Cahn equations
Option C:	Avrami equations
Option D:	Boltzmann's equations
Q11.	A permanent joint formed between two different optical fibers in the field is known

	as a _____
Option A:	Fiber connector
Option B:	Fiber attenuator
Option C:	Fiber splice
Option D:	Fiber dispersion
Q12.	InP has a bandgap energy of 1.35 eV at 300K. Determine the wavelength above which an intrinsic photodetector fabricated from this InP material will cease to operate
Option A:	2.5 micrometer
Option B:	1.47 micrometer
Option C:	0.85 micrometer
Option D:	1.26 micrometer
Q13.	Determine the output current of RAPD having multiplication factor of 39 and photocurrent of 0.469 μ A.
Option A:	18.29 μ A
Option B:	17.21 μ A
Option C:	15.75 μ A
Option D:	19.8 μ A
Q14.	In high electric field, the charge carrier multiplication takes place due to impact ionization takes place in
Option A:	LASER
Option B:	PIN Diode
Option C:	APD
Option D:	LASER
Q15.	What is the name of noise that generates as a result of production and collection of photoelectrons when optical signal incidents on a photo-detector?
Option A:	Thermal Noise
Option B:	Dark Current Noise
Option C:	Quantum Noise
Option D:	Surface Leakage Current Noise
Q16.	The frequency of the absorbed or emitted radiation is related to difference in energy E between the higher energy state E_2 and the lower energy state E_1 . State what h stands for in the given equation? $E = E_2 - E_1 = hf$
Option A:	Planks constant
Option B:	Gravitational constant
Option C:	permittivity
Option D:	Attenuation constant

Q17.	Noise caused by reverse bias leakage current due to random generation of electrons and holes with in the depletion region is known as _____
Option A:	Thermal noise
Option B:	Dark current noise
Option C:	Quantum noise
Option D:	ISI
Q18.	OTDM stands for
Option A:	Optical Time Demultiplexing Method
Option B:	Optical Time Demultiplexing and Multiplexing
Option C:	Optical Time Division Multiplexing
Option D:	Optical Time Division Method
Q19.	Most optical amplifiers use the principle of
Option A:	Spontaneous absorption
Option B:	Spontaneous emission
Option C:	Stimulated emission
Option D:	Continuous absorption
Q20.	Which multiplexing system involves multiplexing of light signals?
Option A:	FDM
Option B:	WDM
Option C:	TDM
Option D:	CDM
Q21.	Base signalling level of SONET called STS-1 supports
Option A:	155 MBPS
Option B:	51.84 MBPS
Option C:	45 GBPS
Option D:	466 MBPS
Q22.	EDFA (Erbium Doped Fiber Amplifiers) operates in the spectral band of _____
Option A:	850-1000 nm
Option B:	650-700 nm
Option C:	550-850 nm
Option D:	1530-1560 nm
Q23.	Which network management function deals with tracking the equipment in the network, managing the addition/removal of equipment and rerouting of traffic ?
Option A:	Performance management
Option B:	Fault Management
Option C:	Accounting Management
Option D:	Configuration Management
Q24.	_____ is the function responsible for billing and for developing lifetime histories of the network components in optical network management

Option A:	Accounting management
Option B:	Security management
Option C:	Fault management
Option D:	Configuration management
Q25.	The term power link budget refers to
Option A:	Overall cost of fiber and its installation
Option B:	Overall cost of fiber equipment's
Option C:	The loss of power from defective components
Option D:	The total available power minus the attenuation losses