BE, Sem-VII, Electronics, SH2018   19/12/17

Duration. ----3 Hours.   Total Marks assigned to the paper. ----80.
Instruction to the candidate if any :-
N.B.
1) Question No-1 is Compulsory.
2) Attempt any Three (03) Questions from remaining Five (05) Questions.
3) Assume suitable data where ever necessary.

Q.1		Attempt the following Questions(any4)	
	a)	Compare Step Index-fiber and Graded Index Fiber	5
	b)	Compare PIN diode and APD diode	5
	c)	Transmission characteristics of optical fiber -Attenuation and effect of attenuation	5
	d)	Give Components of Typical OADM Configurations	5
	e)	Components of a typical network management system &their relationships	5
	f)	Briefly describe the principle of operation of star coupler.	5

Q.2(a)   Describe with suitable sketch the Double Crucible method of fabrication of optical fiber   **10**

Q.2(b)   A silica optical fiber with core diameter large enough to be considered by ray theory has   **10**
a core refractive index of 1.4 and cladding refractive index of 1.35 Determine –(i)The
critical angle (ii)The NA (iii)The Acceptance Angle

Q.3(a)   What do you mean by Dispersion ?State different type of Dispersion ,find intermodal   **10**
Dispersion for 500m long Fiber ,with NA=0.22 and core Refractive index=1.4

Q.3(b)   Compare SOA and EDFA Define Optical SNR & Give typical EDFA Architecture along   **10**
with three possible configurations of an EDFA

Q.4(a)   Draw the structure of avalanche photo diode (APD) along with electric field profile that   **10**
exists in the various regions of APD structure. Explain the working

Q.4(b)   What are the desirable requrinements of a good fiber optic connector ?A 4x4 coupler is   **10**
used in fiberoptic distribution system for connecting the signal from one computer to
its focus terminal find power at each output fiber and also power distribution in desibles
if the power at in put fiber to the star coupler is 200microwatt

Q.5(a)   What is the Basic PON Architecture? Explain optical layer management –OMS, calculate   **10**
channel spacing in WDM soliton transmission scheme that employs DSC and has
following operating parameter ,chromatic dispersion over entire wave length range Equal
to 0.4 ps/nm/km, a bit period of 100ps and modulator spacing of 150km.

Q.5(b)   What is the Principle of OTDR Operation& Explain the method of Dispersion   **10**
measurement using OTDR, Compute maximum BW for the pulse dispersion of step
Index single mode fiber that exhibits pulse dispersion of 25microsec.and has a total
length of 50km.

Q.6   Write short note on(any4):   **20**
(a) Fiber Splicing technique
(b)Connectors and isolator in optical fiber
(c) optical ADD/Drop Multiplexer & Typical OADM Configurations
(d) SONET/SDH with Transmission Formats and SONET Ring
(e) OMA measurement and Time Jitter Measurement set up

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