

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) Define Snell's law and NA? **5**
- b) Compare LED&LASER **5**
- c) With the help of neat sketch, explain the working of optical isolator. **5**
- d) Compare SOA and EDFA **5**
- e) Explain the concept of power penalty in optical network **5**
- f) Components of Typical WDM Link **5**

Q.2(A) What are the reliability considerations that the designer of optical source has to consider on OFC **10**

Q.2(B) What do mean by optical wave guide? How it is different from electrical wave guide? **10**
A silica optical fiber with core diameter large enough to be considered by ray theory has a core refractive index of 1.5 and cladding refractive index of 1.47 Determine –(i)The critical angle (ii)The NA (iii)The Acceptance Angle

Q.3(A) What are the desirable requirienments of a good fiber optic connector ?A 4x4 coupler is 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 **10**

Q.3(B) What is the significance of “V” number? Get an expression for it in term of Numerical Aperture. **10**

Q.4(A) Generic configuration of typical SONET or SDH Network, What are the Network Categories? Give the names of public Network established. **10**

Q.4(B) What are the Types of Attenuation in optical Fiber?150microwatt optical power is launched at the input of 10KMLong optical fiber link operating at850nm .The output power available is 5microwatt .Estimate the total attenuation in dB over the link length neglecting all connector and splice losses ,what is the average attenuation per KM **10**

Q.5(A) What is the Principle of OTDR Operation? Explain the method of Attenuation measurement using OTDR **10**

Q.5(B) What is the Basic PON Architecture? write note on IP over DWDM **10**

Q.6 Write short note on(any4): **20**

- (a) Raman Amplifier
- (b) Modified Chemical Vapour Deposition (MCVD) method of fiber fabrication
- (c) Fabry Perot Filter
- (d) network management functions& Fault management
- (e) connectors used in optical fiber communication