Duration: 3hrs **[Max Marks: 80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any Four	**[20]**
	a	A 45^0-45^0-90^0 Prism is immersed in alcohol (n_1=1.45), what is the minimum refractive index of the prism must have if a ray incident normally on one of the short faces is to be totally reflected at the long phase of the prism	**05**
	b	An optical fiber is made up of glass with a refractive index of 1.55 and its cladding with a refractive index of 1.51.Launching takes place from air.What numerical aperture does the fiber have? What is the acceptance angle? And what is the value of Δ ?	**05**
	c	With a neat sketch explain the optical bands and windows? Which band is known as extended "C" band?	**05**
	d	With a neat sketch explain Photonic crystal fiber and state its applications	**05**
	e	Compare SONET and SDH networks with PDH	**05**
	f	Compare optical Packet switching and Optical burst switching networks.	**05**
2	**a**	How do you classify Optical fiber based on the number of modes guided and refractive index profile. Elaborate it with proper dimension ,neat sketch and the colour codes for the optical fiber	**[10]**
	b	With a neat sketch explain micro bending and macro bending losses in optical fiber? How it can be minimized? An optical signal at a specific wavelength has lost 55% of its power after traversing 3.5Km of fiber.What is the attenuation in dB/Km of this fiber	**[10]**
3	**a**	Compare LED and LASER in detail. A p-n junction LED has an injection efficiency of 60% ,light extraction efficiency of 50% and $\tau_{nr}=10^{-8}$Second.Calculate τ_r	**[10]**
	b	Differentiate between PIN and APD. Define quantum efficiency, Responsivity and long wavelength cut off for photo detector	**[10]**
4	**a**	With a neat sketch explain FSO network,its applications and challenges	**[10]**
	b	Write a short note on Elastic optical Network **OR** Data center network	**[10]**
5	**a**	Briefly Explain Optical Transport Network.Also explain the OTN layers hierarchy model with a diagram	**[10]**
	b	What are the elements of WDM network.With a neat sketch explain the WDM access Network	**[10]**
6	**a**	Write a short note on FTTH network	**[10]**
	b	With a neat sketch explain the working of EDFA and its applications	**[10]**

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