1T01038 - B.E.(Electronics and Telecommunication)(SEM-VIII)(Choice Base Credit Grading System)(R-2019-20)(C Scheme) / 52971 - Optical Communication and Networks

QP CODE: 10038091 DATE: 08/12/2023

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	What do you understand by optical access network.what was the initial deployment. and latest technology	**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 1.5 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	Explain the three windows used for optical fiber communication with a neat sketch.State the materials suitable for sources and detectors for these windows	**05**
	d	With a neat sketch explain Arrayed waveguide grating and state its applications	**05**
	e	Explain SONET frame with a neat sketch	**05**
	f	Briefly explain the two-level hierarchy in WDM Metro Network	**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 cable	**[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 65% of its power after traversing 3.5Km of fiber.What is the attenuation in dB/Km of this fiber	**[10]**
3	**a**	With a neat sketch explain surface emitting LED with its applications	**[10]**
	b	Differentiate between PIN and APD. Define quantum efficiency, Responsivity and long wavelength cut off for photo detector	**[10]**
4	**a**	How Passive optical network functions? What are its types? How it differs from WDM Network	**[10]**
	b	Write a short note on Elastic optical Network	**[10]**

5	**a**	Briefly Explain Optical Transport Network.Also explain the OTN layers hierarchy model with a diagram	**[10]**
	b	With a neat sketch explain the function of Mach Zehnder interferometer ? How it differs from Optical directional coupler?	**[10]**
6	**a**	Discuss the Rise time budget for a point to point optical network	**[10]**
	b	With a neat sketch explain the working of RAMAN amplifier and its applications	**[10]**

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