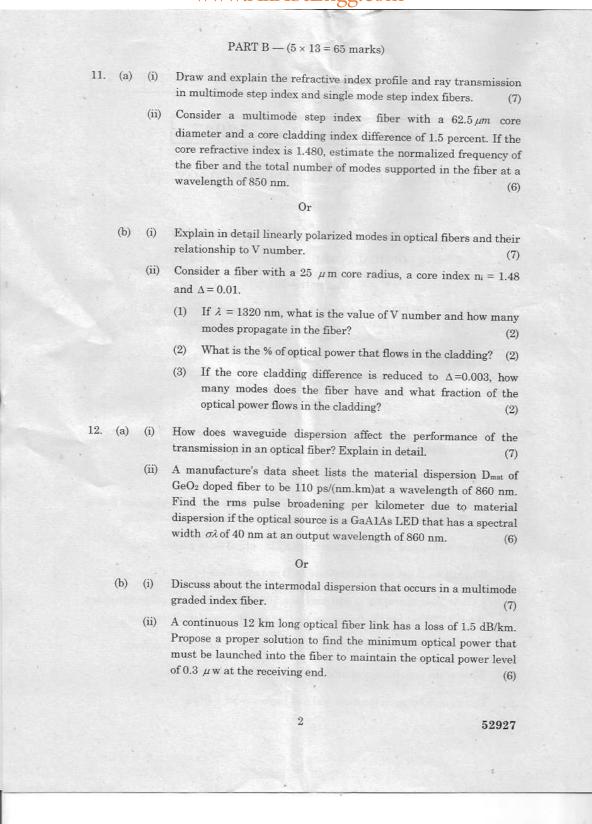
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	Reg. No. :
	Question Paper Code: 52927
	D. D
	B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.
	Seventh Semester
	Electronics and Communication Engineering
	EC 6702 - OPTICAL COMMUNICATION AND NETWORKS
	(Regulation 2013)
	(Common to: PTEC 6702 – Optical Communication and Networks for B.E. (Part – Time) – Sixth Semester – Electronics and Communication Engineering (Regulation 2014)
Tin	ne : Three hours Maximum : 100 mark
	Answer ALL questions.
	PART A — $(10 \times 2 = 20 \text{ marks})$
1.	Why do we prefer step index single mode fiber for long distant communication?
2.	What is the necessity of cladding for an optical fiber?
3.	A fiber has an attenuation of 0.5 dB/ km at 1500 nm. If 0.5mW of optical power is initially launched into the fiber, estimate the power level after 25 km.
4.	Give the measure of information capacity in optical wave guide.
5.	Why silicon is not used to fabricate LED or Laser diode?
6.	A GaAs laser operating at 850 nm has a 500 μ m length and a refractive inde of n = 3.7. What are the frequency spacing and the wavelength spacing?
7.	State the significance of maintaining the fiber outer diameter constant.
8.	What is the significance of intrinsic layer in PIN diodes?
9.	Distinguish between fundamental and higher order solitons.
	. What is EDFA?

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13	3. (a)	(i) With diagram, explain surface and edge emitting LED
		structures. (7)
		(ii) A double heterojunction InGaAsP LED emitting at peak
	ŕ	wavelength of 1310 nm has radiative and non-radiative recombination times of 30ns and 100 ns, respectively. The driver
		current is 40 mA. Find the
		(1) bulk recombination time (2)
		(2) internal quantum efficiency and (2)
		(3) Internal Power level (2)
		Or
	(b)	Draw and Explain the structure of Fabry Perot resonator cavity for a Laser diode. Derive Laser diode rate equation. (13)
14.	. (a)	Develop the schematics of pin photodiode and APD and also explain in detail.
	(b)	Or
	(b)	A given silicon avalanche photodiode has a quantum efficiency of
		65 percent at a wavelength of 900nm. Suppose 0.5 μ W of optical power produces a multiplied photocurrent of 10μ A, What is the
		multiplication factor M?
15	()	
15.	(a)	Explain in brief the blocks and their functions of an optical receiver with schematic diagrams.
		Or
	(b)	Define and explain the principle of WDM networks.
		PART C — (1 × 15 = 15 marks)
16.	(a)	
10.	(a)	Present the design procedure of a SONET network and suggest a frame work in detail.
		Or
	(b)	
		State and discuss on the no linear effects on an optical network
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