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Reg. No: ☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations August-2021
OPTICAL FIBER COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Elaborate about the total internal reflection with the help of suitable optical cable setup.	6M
	b	List out the merits and demerits of optical fiber communication?	6M

OR

2	a	Calculate number of modes of an optical fiber having diameter of 50µm & n_1 =1.48 & n_2=1.46 having operating wavelength 0.82µm.	7M
	b	Illustrate on Mode theory of Circular Waveguides in detail.	5M

UNIT-II

3	a	Explain the Design Optimization of Single mode fibers.	8M
	b	Explain in detail about the Mechanisms which cause Absorption.	4M

OR

4	a	Develop the expression for total dispersion in single mode fiber.	6M
	b	Determine the theoretical cutoff wavelength for single mode fiber.	6M

UNIT-III

5	a	Explain about resonant frequencies of LASER Diode.	7M
	b	Illustrate on edge emitter LED with neat diagram.	5M

OR

6	a	Explain in detail the various Lensing schemes for coupling improvement.	6M
	b	Demonstrate on fiber-related losses in fiber to fiber joints.	6M

UNIT-IV

7	a	Explain in detail the operation of Avalanche Photo Diode with its structure.	7M
	b	Summarize the comparisons of photo detectors.	5M

OR

8	a	A given silicon avalanche photodiode has a quantum efficiency of 65% at a wavelength of 900nm. Suppose 0.5µW of optical power produces a multiplied photocurrent of 10µA. Calculate the multiplication M?	5M
	b	Explain the mechanism of error sources and disturbance in the optical pulse detection with diagram.	7M

UNIT-V

9	a	Analyze the system performance using link power budget of digital systems.	7M
	b	Discuss about error correction in digital link.	5M

OR

10	a	Explain about passive components in WDM.	6M
	b	Discuss about optical CDMA in detail with neat diagram.	6M

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