R19

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular Examinations November/December-2022
FIBER OPTIC COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours
Max. Marks: 60

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

UNIT-I

1	a	Derive the expression for i) Acceptance angle ii) Snell's law	L3	6M
	b	Judge the applications of optical fiber communication.	L1	6M

OR

2	a	What is attenuation? Explain in detail.	L2	6M
	b	Explain the phenomenon of Rayleigh scattering.	L2	6M

UNIT-II

3	a	Give the advantages and disadvantages of LED.	L1	6M
	b	With neat diagram explain the working process of LED.	L4	6M

OR

4	a	Elaborate about resonant frequencies of LASER Diode.	L2	6M
	b	Calculate the GaAs optical source with a refractive index of 3.6 is coupled to a silica fiber that has a refractive index is 1.48. If the fiber and the source are in close physical contact then find the Fresnel reflection at the interface and power loss in dB.	L4	6M

UNIT-III

5	a	Explain the principle behind the operation of PIN photo diode.	L2	6M
	b	What is a preamplifier? Classify them.	L4	6M

OR

6	a	Deduce the equation for S/N ratio of an optical fiber.	L4	6M
	b	Compute the Bandwidth of a photo detector having the parameters as follows: Photo diode capacitance 3pF, amplifier capacitance 4pF, load resistance 60 Ω and amplifier input resistance is 1MΩ.	L3	6M

UNIT-IV

7	a	Analyze the types of budget in optical communication system.	L1	6M
	b	Detail the applications of Optical amplifier.	L2	6M

OR

8	a	Describe the link budget calculations.	L2	6M
	b	2*2 biconical fiber coupler has an optical input power level of P0=400µw, the output power at the other 3 ports are P1=180µw, P2=170µw, P3=12.6nw. Evaluate performance parameters.	L4	6M

UNIT-V

9	a	What is optical Network? Explain the elements of optical network.	L2	6M
	b	List the advantages of optical networks.	L1	6M

OR

10	a	Brief about the working principle of WDM.	L2	6M
	b	Give notes on advantages of optical CDMA.	L1	6M

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