

JAMIA HAMDARD
Department of Computer Science & Engineering
School of Engineering Sciences & Technology
New Delhi-110062
Odd Semester Examination 2024

Paper Name: Fiber Optics Communication
Time: 2 Hours 30 Minutes

Paper Code: BTECE DEI12
Maximum Marks: 60

Section A

Note: Attempt ALL the questions

(4x5=20 marks)

Q. No.	Question	CO	BL
1.	What is WDM system? What are its different components?	CO4	2
2.	How does the light travels through an optical fiber cable? Explain with the help of neat and clean diagram.	CO1	2
3.	What is optical attenuation? What are their types? Explain about each of them	CO3	4
4.	An optical fiber has an attenuation of 1.5 dB/km. If 0.5 mW of optical power is initially launched into the fiber, what is the power level in microwatts after 8 Km?	CO2	5

Section B

Note: Attempt any FOUR (4) questions

(4x10=40 marks)

Q. No.	Question	CO	BL
1.	Analyse the working principle in details of following optical transmitter: a) LASER b) Light Emitting Diode	CO3	2
2.	Discuss the Nonlinear effects in fiber optic links. Explain self-phase modulation and group velocity dispersion.	CO5	4
3.	Analyse the step index fiber. How signal degrades in an optical fiber due to dispersion and attenuation.	CO4	4
4.	Discuss the working of the following optical amplifiers a) Erbium-Doped Fiber Amplifiers b) Raman Amplifiers	CO4	2
5.	Explain the working of integrated optical switches. What are their types? Briefly explain about each of them.	CO2	3
6.	An optical fiber of core radius 10 μm is having refractive index of core(n_1) = 1.57 and refractive index of the cladding(n_2) = 1.55, wavelength of air is given as 1550 nm. Calculate its numeric aperture and mode of operation.	CO1	5

BL : Bloom's Taxonomy Level (1-Remembering, 2-Understanding, 3-Applying, 4- Analysing, 5-Evaluating, 6- Creating)