K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

April - May 2022

Program: B.Tech – EXTC

Examination: LY Semester: VIII

Course Code: 1UEXC801 and Course Name: Optical Communication Networks

Duration: 03 Hours

Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	12		
i)	Write the advantages of optical communication.	2	CO1	U
ii)	Assume that there is a glass rod of refractive index 1.5 surrounded by air. Find the critical angle.	2	CO1	Ap
iii)	What are the types of misalignment in fiber joint?	2	CO2	U
iv)	Write down the differences between LED and Laser Diodes.	2	CO3	U
v)	Write short note on circulator	2	CO4	U
vi)	Describe in short coupler.	2	CO4	U
vii)	Explain STS-1 Signal?	2	CO5	U
viii)	What is the function of the section layer?	2	CO5	U
Q.2	**Solve any four questions out of six.**	16		

i)	Define the following terms with respect to optical laws, Reflection Refraction Refractive index Snell's law.	4	CO1	U
ii)	Discuss the attenuation encountered in optical fiber communication due to: 1. Bending 2. Scattering 3. Absorption	4	CO2	U
iii)	For a Photodiode define quantum efficiency and responsivity.	4	CO3	U
iv)	Explain Fabry-Perot filters.	4	CO4	U
v)	Explain the Optical Access Network Architecture.	4	CO5	U
vi)	Explain network management with a Diagram in optical networks.	4	CO6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Write short notes on the following. Single mode step index fiber. Multimode step index fiber. Multimode graded index fiber	8	CO2	U
ii)	Draw and explain the schematic of edge emitting double hetero junction	8	CO3	U
iii)	With a neat diagram, explain the elements of SONET infrastructure.	8	CO5	U
Q.4	**Solve any two questions out of three.**	**16**		
i)	Explain fusion splices with neat diagram.	8	CO2	U
ii)	With schematic representation explain the working principle of PIN photodiodes.	8	CO3	U
iii)	Draw and explain with principle of operation of EDFA.	8	CO4	U