School of Engineering

B.TECH Electronics and Communication Engineering in Artificial Intelligence and Machine
Semester End Examination - Jun 2024

Duration : 180 Minutes
Max Marks : 100

Sem VI - G2UC603T - Optical Communication

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Define the optical properties of the core and cladding material in an optical fiber.	K1(2)
2)	Explain the basic differences between direct and indirect band gap materials.	K2(4)
3)	Explain the steady state electron density in the active region when a constant current flowing through it.	K2(6)
4)	Illustrate the expressions of internal quantum efficiency and internal power of the LED with suitable mathematical analysis.	K3(9)
5)	Illustrate the various advantages of the heterojunction structured materials and the major differences between LED and LASER sources.	K3(9)
6)	Examine the different types of the sources of noise occurred in optical communication system.	K5(10)
7)	Analyze the ionization rate and multiplication operation in an APD. Also define the responsivity of an APD.	K4(12)
8)	Examine the expression of group delay, pulse spreading and the dispersion factor in waveguide dispersion with suitable mathematical analysis.	K5(15)
9)	Briefly examine the intermodal dispersion and their types in an optical fiber.	K5(15)
10)	Ellaborate attenuation with suitable mathematical derivation. Calculate the loss in dB/km of a fiber with length of 150 m fed with a power of 10 micro-watt and produced an output of 8 micro-watt.	K6(18)