

School of Electrical Electronics and Communication Engineering
Electronics and Communication Engineering
ETE - Jun 2023

Time : 3 Hours

Marks : 50

Sem II - MCEN5020 - Optical Communication
Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary

1. Explain Modal birefringence in single mode fibers, K2 CO5 (2)
2. Define V number? K2 CO4 (2)
3. Why the refractive index of core and cladding are different? Which one has greater refractive index and why? K2 CO3 (2)
4. Mention the three limitations of conventional metallic waveguide? K1 CO2 (2)
5. Define Numerical aperture. K1 CO1 (2)
6. What is the population Inversion? Explain the mechanism of Population inversion for three level & four level energy state system. K3 CO2 (5)
7. Write a brief note on polarization maintain fiber. K4 CO6 (6)
8. Discuss the linear scattering losses in optical fibers with respect to Rayleigh Scattering. K3 CO1 (5)
9. An optical link is to be established between two stations within a township at a distance of 6000 meters. To test the performance of the link, the set up consisting of step index (multimode fiber) with a core refractive index of 1.49 and a relative refractive index difference of 2%. Calculate:
(a) How much broadening in the rms pulse due to intermodal dispersion
(b) How much would be the delay difference between the slowest and fastest modes at output? K5 CO5 (8)
10. Briefly discuss the evolution of Optical networks. Highlight the significant features of the optical network generations. K5 CO4 (8)
11. Mention the criteria for choosing the photo detectors for optical communication. How does a reverse bias p-n diode act as a detector? K4 CO3 (8)