

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER M. TECH DEGREE EXAMINATION
Electronics & Communication Engineering
(Telecommunication Engineering)
04 EC 6809—Optical Communication Systems

Max. Marks:60

Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3marks

1. An optical fiber with core refractive index of 1.50 and cladding refractive index of 1.47. Determine a) Critical angle at the core cladding interface. b)The NA for the fiber. c) The acceptance angle in air for the fiber.
2. Explain how a reverse biased p-n junction is used as optical receiver?
3. Discuss about the characteristics of point-to-point light wave system architecture.
4. Compare semiconductor optical amplifiers and doped fiber amplifiers.
5. Briefly explain fiber solitons.
6. Explain about Gordon- Hauss effect.
7. Write short notes on tunable optical fibers.
8. Explain coherent optical receiver with block diagram.

PART B

Each question carries 6marks

9. Write notes on dispersions in optical fibers.
OR
10. With neat sketches explain the principle of operation of semiconductor LASER.
11. Explain different noises in optical receiver.
OR
12. Discuss in detail about the different sources of power penalties that can lead to sensitivity degradation even without signal transmission through the fiber.
13. Explain loss limited and dispersion limited light wave systems.
OR
14. Discuss different types of system architectures. Suggest the application of each of these topologies.
15. Explain the operation of EDFA.
OR
16. Explain about the pre compensation schemes for dispersion management in optical amplifiers.

17. Derive the expression for the bit rate-distance product, BL_T for standard solitons.

OR

18. Explain the impact of amplifier noise in optical amplifiers.

19. Discuss about WDM system components.

OR

20. Write short notes on AWG and add drop multipliers.