B.E. Semester- VI (E.C.) Question Bank

(Optical Communication)

All questions carry equal marks (10 marks)

Q.1	Draw the block diagram of general communication system and fiber optics communication system? Explain in detail.
Q.2	What are the main components of fiber optics communication system? Explain them in detail.
Q.3	Explain the advantages of fiber optics communication in detail.
Q-4	Name the basic principle of light propagation in optical fiber. Explain in detail.
Q.5	Explain modes in optical fiber.And explain mode coupling in optical fiber.
Q.6	Explain step index and graded index fiber in detail.
Q.7	Differentiate multimode and single mode fibers.
Q.8	Differentiate step index and graded index fibers. And Derive the relationship between NA and Acceptance angle.
Q.9	Write a short note on Evanescent field. Write a short note on Goos-Haenchen shift.
Q.10	Explain any two method of fiber drawing in detail.
Q.11	Explain fiber buffering. Give fiber joint losses due to misalignment.
Q.12	Explain intrinsic joint losses in detail. Explain intrinsic absorption loss in detail.
Q.13	List and Explain extrinsic absorption loss in detail.
Q-14	Write a short note on Rayleigh and Mie scattering.
Q.15	What are the types of linear scattering loss? Explain any one in detail.
Q.16	What are the types of non linear scattering loss? Explain any one in detail.
Q.17	a) Explain the working of a binary PCM regenerator. b) Explain the relation between repeater spacing and attenuation on fiber optic link.
Q.18	What do you mean by dispersion in fiber. How it is related to bit rate of system?
Q.19	What is material dispersion? What is waveguide dispersion? Explain Intramodal dispersion.
Q.20	Compare intermodal dispersion in multimode step index fiber and graded index fiber.
Q.21	Prove that intermodal dispersion in multimode step index fiber is high compared to graded index fiber.
Q.22	Explain stimulated emission and spontaneous emission with the help of two level energy band diagrams.
Q.23	What are the requirements of optical sources? Explain any one type of source in detail.
Q.24	a) Differentiate stimulated emission and spontaneous emission. b) Explain population inversion in case of three level LASER.
Q.25	a) Explain population inversion in case of four level LASER. b) Explain spontaneous emission in p-n junction with the help of energy band diagrams.
Q.26	a) Explain stimulated emission in p-n junction with the help of energy band diagrams. b) Write a short note on DH LASER.
Q.27	a) Draw neat diagram of stripe geometry DH LASER and give its advantages over broad area LASER. b) Give the advantages of LED over LASER.
Q.28	a) Derive the equation of coupling efficiency of LED. b) Write a short note on DH LED.
Q.29	a) Write a short note on SLED. b) Write a short note on ELED.
Q.30	a) Give the requirements of optical detectors.

	b) Explain the basic principle of light detection in p-n photodiode.
Q.31	a) Explain Responsivity of detector. b) Write a short note on in p-n photodiode.
Q.32	a) What are the limitations of p-n photodiode? b) Write a short note on in p-n photodiode.
Q.33	a) Explain p-i-n photodiode in detail. b) What is the main advantage of p-i-n photodiode over p-n photodiode?
Q.34	a) Explain avalanche photodiode in detail. b) Explain NEP, detectivity and specific detectivity of photodiode.
Q.35	Give the ac equivalent circuit of APD. Explain Avalanche photo diode in detail.
Q.36	Explain the mean power feedback method of automatic level control in optical transmitters.
Q.37	Draw the diagram of the optical transmitter with parameters affecting its performance.
Q.38	a) Draw the electrical equivalent circuit of fiber optic receiver. b) Draw the diagram of digital optical fiber transmission system.
Q.39	Derive the equation of signal to noise ratio of analog optical receiver.
Q.40	a) Explain the concept of optical repeater. b) Draw the block diagram of PCM repeater and explain it.