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APR-MAY 2022

B. E. (Eighth Semester) Examination, ~~2020~~

(New Scheme)

(Et & T Engg. Branch)

ADVANCED COMMUNICATION SYSTEMS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions are compulsory including part (a) of each question. Attempt any two parts from part (b), (c) and (d). Any missing or misprint may be assumed.*

Unit-I

1. (a) Write down the advantages of satellite communication. 2

   (b) How to determine the earth coverage and find out the height of satellite? 7

(c) Describe in detail the three laws of Kepler used for satellite communication. 7

(d) What is orbital perturbation? Give brief explanation about launching of satellite. 7

Unit-II

2. (a) In satellite system why upward frequency is greater than downward frequency? 2

(b) Derive the expression for Signal to Noise Ratio for FM detection in case satellite communication. 7

(c) Find out the expression for received power in case of satellite communication. 7

(d) Determine the power received by a satellite located at 40,000 KMs from the surface of Earth. Satellite is operating a frequency of 11 GHz and EIRP of 21 Decible Watts. The gain of a receiving antenna is 50·5 Decibel Watts. 7

Unit-III

3. (a) Give the full form of DAMA and FHSS. 2

(b) Draw TDMA, FDMA and CDMA. Discuss their receiver merits and demerits communication. 7

(c) Draw the block diagram for Transmitter and Receiver of CDMA system and explain its working. 7

(d) Give all the necessary technical details of TDMA system used in satellite communication. 7

Unit-IV

4. (a) What is the significance of total internal reflection for fiber optic communication? 2

(b) Explain Attenuation and Dispersion in case of Optical communication. 7

(c) A SIF in air has NA equal to 0·16 and core refractive index is 1·45 and core diameter of 60 micro-meter. Determine normalized frequency for the fiber when light at a wavelength of 0·9 micro-meter is transmitted also estimate the number of guided modes propagating in the fiber. 7

(d) Give details of types of Optical Fiber with necessary diagrams. 7

Unit-V

5. (a) Mention the acronym LASER stands for what? 2

(b) Draw the block diagrams for Surface and Edge

emitting LEDs used for optical communication and explain their working. 7

(c) Explain the phenomenon of stimulated absorption, spontaneous emission and stimulated emission and population inversion in case of laser diode. 7

(d) Draw the block diagram and explain the working of PIN and Avalanche photo diode. 7