

Q 2 (a) What is modulation? Explain the need of modulation and draw the block diagram of basic communication system.

Answer Page Number 5 to 6 of Text Book

Q 2 (b) A receiver connected to an antenna whose resistance is 75Ω has an equivalent noise resistance of 25Ω . Calculate the receiver noise figure in decibels and its equivalent noise temperature.

Answer Page 32, Example 2.5 of Text Book

Q 2 (c) List different types of internal and external noise.

Answer Page 15 to 21 of Text Book

Q 3 (a) Draw the block diagram of AM transmitter and explain its working.

Answer Page 43 to 46 of Text Book

Q 3 (b) With the help of a block diagram, explain the working of phase shift method used for generating SSB signal.

Answer Page 65 to 67 of Text Book

Q 4 (a) In an FM system, when the audio frequency (AF) is 400 Hz and audio frequency voltage is 2 Volts, the deviation is 4 KHz. If the AF voltage is now increased to 7 Volts, what is the new deviation? If AF is raised to 10 Volts while the AF is dropped to 200 Hz, what is the deviation? Find the FM modulation index in each case.

Answer Page 84, Example 2.5 of Text Book

Q 4 (b) Draw block diagram of Armstrong frequency modulator system and describe its working.

Answer Page 109 to 113 of Text Book

Q 5 (a) Discuss the following term related to Radio Receiver:
(i) Selectivity (ii) Sensitivity
(iii) Image frequency (iv) Double spotting

Answer Page 123 to 128 of Text Book

Q 5 (b) Describe the operation of stereo FM multiplex demodulator with the help of block diagram?

Answer Page 173 to 174 of Text Book

Q 6 (a) An antenna has a radiation resistance of 72Ω , loss resistance of 8Ω and a power gain of 20. Find:

- (i) Antenna efficiency
- (ii) Antenna gain (Power actually radiate)

Answer Page 262 to 264 of Text Book

Q 6 (b) Explain the functioning of the following:

- (i) End fire array
- (ii) Broad side array

Answer Page 277 to 278 of Text Book

Q 7 (a) Explain following terms in connection with sky wave propagation.

- (i) Virtual Height
- (ii) Critical frequency
- (iii) Maximum Usable Frequency
- (iv) Skip distance

Answer Page 239 to 246 of Text Book

Q 7 (b) A rectangular waveguide whose breadth is 5 cm internally and has a 6 GHz signal propagate in it. Calculate the cut-off wavelength, the guide wavelength, group velocity, and phase velocity for the $TE_{1,0}$ mode.

Answer Page 328, Example 10.7 of Text Book

Q 8 (a) Compare PAM, PWM and PPM.

Answer Page 494 to 506 of Text Book

Q 8 (b) Explain information theory and capacity of noisy channel. Discuss the unit of information.

Answer Page 492 of Text Book

Q 8 (c) What is telegraphy? Describe briefly.

Answer Page 508 to 510 of Text Book

Q9 Write short note on the following (any TWO)

- (i) Satellite communication.

Answer Page 581 to 591 of Text Book

(ii) Microwave link- simplified block diagram and working principle.

Answer Page 571to 575 of Text Book

(iii) Frequency Division Multiplexing

Answer Page 564 to 566 of Text Book

Text Book

Electronic Communication Systems, George Kennedy and Bernard Davis, Fourth Edition (1999), Tata McGraw Hill publishing Company Ltd.