Question Paper Code: 45423

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Fifth Semester

Electrical and Electronics Engineering

14UEC523 - COMMUNICATION ENGINEERING

(Common to Electronics and Instrumentation Engineering and
Instrumentation and Control Engineering)

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The _____ signal can be detected with the help of synchronous detector.

    (a) SSB   (b) DSB-SC   (c) SSB-SC   (d) none of these

2. VSB modulation is preferred in TV because

    (a) it reduces the bandwidth requirement to half
    (b) it avoids phase distortion at low frequencies
    (c) it results in better reception
    (d) none of these

3. Frequency shift keying is used mostly in

    (a) Satellite Communication   (b) Telephony
    (c) Telegraphy   (d) Radio Transmission

4. The bandwidth of BFSK is _____ that of the bandwidth of BPSK.

    (a) thrice   (b) twice   (c) less than   (d) none of these

5. The information rate R is less than or equal to a rate C is called the

    (a) Channel capacity   (b) Coding

    (c) Probability   (d) Information rate

6. Linear codes are used for

    (a) Forward error detection   (b) Backward error detection

    (c) Backward error correction   (d) Forward error correction

7. The most important application of the spread spectrum technique is

    (a) time division multiplexing   (b) code division multiplexing

    (c) both (a) and (b)   (d) none of these

8. The _____ spread spectrum is a FM or FSK technique.

    (a) Frequency Hopping   (b) Direct Sequence

    (c) Transistors   (d) Semiconductor Lasers

9. _____ is used as a figure of merit for the fiber.

    (a) Aperture angle   (b) Refractive Index

    (c) Numerical Aperture   (d) None of these

10. Detector used in optical fiber is

    (a) Photo diodes   (b) LEDs

    (c) Transistors   (d) Semiconductor Lasers

7. The most important application of the spread spectrum technique is

    (a) time division multiplexing   (b) code division multiplexing

    (c) both (a) and (b)   (d) none of these

8. The baud rate is defined as

    (a) The no of samples per second   (b) The no. of revolutions per second

    (c) Both (a) and (b)   (d) None of these

9. Example of power limited communication channel is

    (a) co-axial cable   (b) cellular channel   (c) satellite   (d) PSTN

10. _____ is a fiber specification, most important to the designer point of view

    (a) Bandwidth   (b) Attenuation   (c) Numerical aperture (d) None

PART - B (5 x 2 = 10 Marks)

11. State the Carson's rule.

12. Define bit rate and baud rate.

13. Compare NRZ and RZ.

14. List the different types of handoffs.

15. Define numerical aperture.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the operation of Super heterodyne receiver and compare its performance with Tuned Radio frequency receiver. (16)

Or

(b) Using suitable Mathematical analysis show that FM modulation produces infinite sidebands. Also deduce an expression for the frequency modulated output and its frequency spectrum. (16)

17. (a) With a neat block diagram explain the PCM modulation and demodulation. Derive the processing gain of the DPCM. (16)

Or

(b) Explain QPSK transmitter and receiver with block diagram. Also draw the constellation and phasor diagram of QPSK. (16)

18. (a) A database management system has following alphabet with probability of occurrence as shown below. Generate the Huffman code with minimum code variance. Determine the code variance and code efficiency. (16)

Symbol	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Probability	0.125	0.0625	0.225	0.0625	0.125	0.125	0.225

Or

(b) Briefly discuss on various error control codes and explain in detail with one example for convolution code. (16)

45423

19. (a) (i) Compare the performance of CDMA with FDMA and TDMA. (8)

(ii) Draw and explain the block diagram of transmitter and receiver of CDMA. (8)

Or

(b) With neat block diagram explain the frequency division multiple access technique. Discuss its application in communication. (16)

20. (a) (i) Illustrate the uplink and downlink model of satellite communication system. (8)

(ii) Explain the concept of Optical sources and detectors. (8)

Or

(b) Explain Optical Fiber Communication link with a neat block diagram. List the advantages and disadvantages of Optical Fiber Communication. (16)

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45423