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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 52922

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Sixth Semester

Electrical and Electronics Engineering

EC 6651 – COMMUNICATION ENGINEERING

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

(Regulation 2013)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define AM and draw its frequency spectrum.

2. FM signal has frequency deviation of 75 KHz and what is the BW of FM signal.

3. What is meant by quantisation noise

4. A signal is PCM coded with 4 bits/sample. What is bit rate if sampling frequency is 8KHz?

5. How many parity bits are there in block code (7,4).

6. Draw the RZ waveform for bit sequence of 10101.

7. What is meant by SS technique?

8. What are the ways a communication channel can be shared among multiple users?

9. Write any two properties of optical Fiber.

10. Write about GEO Satellites.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Define and derive the FM equation. (6)

(ii) Explain FM Reactance modulator. (7)

Or

(b) (i) Compare AM and FM with respect standard bandwidth requirement, noise immunity and type of demodulators. (6)

(ii) Draw block diagram of AM communication system(both transmitter and Receiver) Derive the standard AM equation. (7)

12. (a) Explain DM with transmitter and receiver block diagram. Comment on its advantage and drawbacks. (13)

Or

(b) Explain coherent BFSK modulation and demodulation with blockdiagram and waveforms. (13)

13. (a) Perform Huffman Coding and Shannon Fano coding on the given source. Write the code words for each word and coding efficiency for both the coding methods. (13)

m_0	m_1	m_2	m_3	m_4
0.4	0.2	0.2	0.1	0.1

Or

(b) (i) Find all the code words of (6,3) code using (6)

$$P = \begin{matrix} 0\,1\,1 \\ 1\,0\,1 \\ 1\,1\,0 \end{matrix}$$

(ii) Determine the output sequence of (2, 1, 3) convolution code using encoder circuit.

Given $g_1^{(2)} = 1110$ and $g_1^{(2)} = 1101$. (7)

14. (a) (i) Write about CDMA. (5)

(ii) Describe the features of FDMA and TDMA. (8)

Or

(b) (i) What features of CDMA makes it suitable to be applied in cellular mobile communication? (7)

(ii) How SDMA is advantages over other multiple access techniques. (6)

15. (a) (i) What are the advantages of Optical Fiber over other media. (5)

(ii) Draw the optical link block diagram and explain about different types of fibers. (8)

Or

(b) Explain satellite communication with uplink and downlink model. (13)

PART C — (1 × 15 = 15 marks)

16. (a) (i) In spread spectrum modulation differentiate between Chip rate and bit rate. (3)

(ii) The input modulated signal of the Mixer stage in AM receiver is centered at 950 KHz. What is the image frequency? (3)

(iii) Draw and explain the block diagram of QPSK transmitter and Receiver with the phasor and signal space diagram. (9)

Or

(b) Analyse the performance of line codes like NRZ, RZ, AMI for the given bit pattern 11011. From the analysis, comment on each of its merits and demerits. (15)

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