B.E./B. Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Electronics and Instrumentation Engineering

EC 6651 – COMMUNICATION ENGINEERING

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

(Regulations 2013)

Time : Three Hours Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Draw the Frequency Spectrum of AM.
2. Mention the advantages and disadvantages of SSB Transmission.
3. Define Sampling theorem and Aliasing.
4. Compare the performance of FSK and PSK based on the power and bandwidth efficiency.
5. Define source coding. State the significance of source coding.
6. Draw the NRZ and RZ waveforms for the pulse stream 10101011.
7. Define Pseudo-Noise sequence.
8. Define near-far problem in CDMA.
9. What are the different types of satellites ?
10. Write about aperture actuators used in satellite.

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the Method of generating single side band signal using balance modulators. (8)

(ii) Discuss the principle of AM super heterodyne receiver with block diagram. (8)

OR

(b) Explain in detail Armstrong method of FM generation and compare NBFM and WBFM. (16)

12. (a) With neat sketch, explain the generation of DM signals. State the drawbacks of DM and suggest a method to correct it. (16)

OR

(b) (i) Explain the QPSK modulation schemes with its constellation diagram. (10)

(ii) Briefly describe the concept of QAM and draw the constellation diagram of QAM. (6)

13. (a) Six symbols of the alphabet of discrete memory less source and their probabilities are given below. S = {S0, S1, S2, S3, S4, S5} P (S) = {0.1, 0.1, 0.2, 0.2, 0.25, 0.15} Code the symbols using Huffman coding and Shannon fano coding and compare the efficiency. (16)

OR

(b) Explain briefly about Convolution and Linear block codes with neat block diagram with an example. (16)

14. (a) Explain the principle of operation of direct sequence spread spectrum with its n performance parameters. How pseudo noise is generated ? (16)

OR

(b) (i) Describe CDMA technique in detail. (8)

(ii) Explain the role of SDMA in wire and wireless communications. (8)

15. (a) Discuss briefly the Multiple access techniques used in satellite communications. (16)

OR

(b) Write short notes on :

(i) Optical sources and detection (8)

(ii) SCADA (8)