Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 70442

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth Semester

Electronics and Instrumentation Engineering

EC 6651 — COMMUNICATION ENGINEERING

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

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define modulation index.

2. Differentiate NBFM and WBFM.

3. State any two advantages of MSK.

4. State Sampling theorem.

5. Define source coding. State the significance of source coding.

6. Draw the NRZ and RZ waveforms for the pulse stream 10101011.

7. List the pros and cons of CDMA system.

8. How FDMA does resolve Near-Far problem?

9. State the application of C-band in satellite communication.

10. What is a photo detector? What is its important requirement?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Explain the Method of generating single side band signal using balance modulators. (7)

    (ii) Discuss the principle of AM super heterodyne receiver with block diagram. (6)

Or

   (b) Explain in detail Armstrong method of FM generation and compare NBFM and WBFM. (13)

12. (a) Explain the generation and detection of PWM signals. (13)

Or

   (b) (i) Explain the concept of BPSK and QPSK techniques in data communication. (10)

    (ii) Compare PCM and DM. (3)

13. (a) (i) Compare and contrast BEC and a BEC. (6)

    (ii) Explain the BW-SNR trade-off with related theorem. (7)

Or

   (b) (i) What is source coding? What is error control coding? Compare and contrast these two essential coding techniques in a digital communication system. (2+2+3)

    (ii) Explain the procedure of computing a Shannon-Fano code. (6)

14. (a) Discuss the salient features of a TDMA system and compare it with that of an FDMA system. (13)

Or

   (b) (i) Describe the usage of space division multiplexing in wired and wireless communication. (7)

    (ii) Discuss the concept of cDMA with suitable sketches. (6)

15. (a) Draw the block diagram of satellite communication system and derive the link equations. (13)

Or

   (b) (i) List the advantages of optical fibers. Classify the optical fibers based on the material used and profile structure. (8)

    (ii) Write short notes on power line communication. (5)

PART C — (1 × 15 = 15 marks)

16. (a) Analyse the advantages of delta modulation. How is it different from adaptive delta modulation? Justify.   (7+8)

Or

(b) Compare and contrast GMSK versus MSK and discuss on the advantages and disadvantages of both the techniques.   (7+8)

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