Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 21186

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Fifth Semester

Electrical and Electronics Engineering

EC 1308 A — PRINCIPLES OF COMMUNICATION ENGINEERING

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

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is the difference between low level and high level AM transmitter?

2.   State the performance parameters of a communication receiver.

3.   Compare the amplitude and angle modulation.

4.   State Carson's rule.

5.   What is the difference between MSK and GMSK?

6.   Compare the spectral efficiency of M-ary FSK and M-ary PSK.

7.   What is meant by aliasing?

8.   What information can be obtained from Eye pattern?

9.   Define processing gain related to spread spectrum communication.

10.   State the advantages of CDMA over TDMA.

PART B — (5 × 16 = 80 marks)

11. (a) Derive the expressions for the amplitude modulated waveform and power distribution in the modulated wave. Also trace the message, carrier and modulated waveforms. (16)

Or

(b) (i) Explain the operation of superheterodyne receiver with a neat block diagram. (12)

(ii) What is the need for double conversion in AM receivers? (4)

12. (a) With a neat block diagram, explain in detail the indirect method of FM generation. (16)

Or

(b) (i) With relevant diagrams, explain the PLL based FM demodulation. (12)

(ii) Compare PLL based FM demodulator with other FM demodulators. (4)

13. (a) (i) Explain with block diagrams, the DPSK transmitter and receiver. (12)

(ii) Also derive the expression for probability of error for this system. (4)

Or

(b) (i) With block diagrams, explain the MSK transmitter and receiver. (10)

(ii) Compare the performance of binary and quaternary modulation techniques. (6)

14. (a) State and derive sampling theorem for low pass signals. Also draw the spectrum of original and sampled signals. (16)

Or

(b) State and derive Nyquist's criterion for distortion less baseband binary transmission. Discuss on the ideal and practical solutions of the same. (16)

15. (a) (i) What is PN sequence? Explain with relevant diagram, the PN sequence generation. (10)

(ii) State and explain the properties of PN sequence. (6)

Or

(b) (i) Describe the DS spread PSK transmitter and receiver with necessary diagrams. (10)

(ii) Derive the expression for probability of error of this system. (6)

21186