

C 3188

B.E /B.TECH. DEGREE EXAMINATION, MAY/JUNE 2007.

Fifth Semester

Electronics and Communication Engineering

EC 1301 – COMMUNICATION THEORY

(Common to B.E . (Part-Time) Fourth Semester Regulation 2005)

Time: Three hours

Maximum: 100 marks

Answer ALL Questions

PART A – (10 X 2 = 20 marks)

1. Define amplitude modulation and modulation index.
2. What is the advantage of SSB-SC modulation over AM?
3. Differentiate phase modulation and frequency modulation.
4. Draw the block diagram of PLL.
5. What is whitenoise?
6. Define noise figure of a communication system.

7. What is threshold effect with respect to noise?
8. What is the use of pre-emphasis and de-emphasis in FM systems?
9. Define entropy for a discrete memory less source.
10. State channel coding theorem.

PART B – (5 X 16 = 80 marks)

11. (a) (i) Draw the block diagram for the generation and demodulation of a VSB signal and explain the principle of operation. (10)
 - (ii) What is frequency translation? Explain. (6)
 11. (b) (i) Explain the functions of each block in the super heterodyne receiver. (9)
 - (ii) Define sensitivity, selectivity and image frequency of a receiver system. (7)
 12. (a) (i) Explain the principle of indirect method of generating a wide-band FM signal with a neat diagram. (8)
 - (ii) Differentiate narrow band and wide band FM (8)
- Or
12. (b) (i) Discuss the effects of non linearities in FM systems. (8)
 - (ii) How do you demodulate the Fm wave using frequency discriminator. (8)
 - 13.(a) Discuss the types, causes and effects of the various forms of noise in the receiver. (10)
 - (b) Discuss the following:
 - (i) Noise equivalent bandwidth
 - (ii) Narrow-band noise
 - (iii) Noise temperature

(iv) Noise power Spectral Density

14. (a) (i) Define Hilbert Transform with a suitable example . (6)

(ii) Give the method of generation and detection of SSB waver. (10)

Or

(b) Compare the noise performance of AM and FM systems. (16)

15. (a) (i) Discuss Source Coding Theorem. (5)

(ii) Give the advantage and disadvantage of channel coding in detail. (6)

(iii) Discuss the data compaction (5)

Or

(b) (i) Write short notes on Differential entropy. (3)

(ii) Derive the channel capacity theorem. (7)

(iii) Discuss the implication of the information capacity theorem. (6)

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