Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 71448

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fourth Semester

Electronics and Communication Engineering

EC 2252/EC 42/EC 1252/080290020 — COMMUNICATION THEORY

(Regulation 2008)

(Common to PTEC 2252 Communication Theory for B.E. (Part – Time)
Third Semester ECE — Regulation 2009)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. A carrier is amplitude modulated to a depth of 80%. Calculate the total power in the modulated wave, if the carrier is 10 watt.

2. Draw the frequency spectrum of VSB. Where it is used?

3. State the Carson's rule.

4. Compare Narrowband and Wideband FM.

5. Define noise figure.

6. Define SNR.

7. What are the methods to improve FM threshold reduction?

8. What is capture effect?

9. Define entropy and its properties.

10. What is the channel capacity of a BSC and BEC?

PART B — (5 × 16 = 80 marks)

11. (a) Draw the block diagram of superheterodyne receiver and explain the functions of each block.

Or

(b) (i) Discuss the methods of demodulation of DSBSC signal using costas loop.

(ii) Compare the characteristics of DSBFC, DSBSC, SSBFC, SSBSC schemes.

12. (a) (i) Explain the principle of indirect method of generating a wideband FM signal.

(ii) Discuss the effects of non linearities in FM systems.

Or

(b) (i) Draw the circuit diagram of Foster-Seeley discriminator and explain its working.

(ii) What are the applications of PLL?

13. (a) Write short notes on Shot noise, Thermal noise, White noise.

Or

(b) Write the details about narrow band noise and the properties of quadrature components of narrowband noise.

14. (a) Obtain the expression for figure of merit of DSB-SC receiver using coherent detection.

Or

(b) Explain pre-emphasis and De-emphasis in detail.

15. (a) (i) Find the Huffman coding for the probabilities P = {0.0625, 0.25, 0.125, 0.125, 0.25, 0.125, 0.0625} and the efficiency of the code.

(ii) Discuss the source coding theorem.

Or

(b) (i) State and explain Shannon's theorems on channel capacity.

(ii) Differentiate lossless and lossy coding.