Question Paper Code : 21190

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

Sixth Semester

Electronics and Communication Engineering

EC 1351 A — DIGITAL COMMUNICATION TECHNIQUES

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term "Quantisation".

2. What is the need for a pre-alias filter?

3. What are matched filters? Why are they so called?

4. List out some applications of base band transmission.

5. What is carrier synchronisation?

6. State two valid differences between pass band and base band transmission.

7. State the merits of Viterbi algorithm.

8. Define "hamming distance" of a code.

9. What are pseudo noise sequences?

10. Define "processing gain of a code".

PART B — (5 × 16 = 80 marks)

11. (a) With neat block diagrams, explain the concept, principle, generation and detection of Pulse Code Modulation signals. Comment on its merits and demerits.

Or

(b) (i) Explain the concept of sampling process. Draw relevant diagrams. (6)

(ii) With neat diagrams, explain adaptive delta modulation system. (10)

12. (a) In detail, give a complete detailed overview of noise effects on base band transmission and the remedial measures employed for it. Draw relevant diagrams.

Or

(b) Give a detailed note on :

(i) Adaptive equalisation techniques. (10)

(ii) M-ary PAM base band transmission. (6)

13. (a) 'Binary frequency shift keying' – Explain its generation, coherent detection, signal space diagram and BER expression. Draw block diagrams.

Or

(b) (i) Discuss on various techniques employed for symbol synchronisation. (8)

(ii) Explain the generation and detection of MSK scheme with mathematical expressions. (8)

14. (a) Elaborate on convolution codes. Give an example and explain the generation with necessary diagrams and maximum likelihood decoding of the codes.

Or

(b) (i) Bring out the differences between coding schemes and coded modulation schemes. (6)

(ii) With a suitable illustration, explain the Trellis coded modulation scheme. Comment on its significance. (10)

2 21190

15. (a) With neat block diagrams, explain the direct sequence spread spectrum system that employs a coherent binary phase shift keying. Give BER expression.

Or

(b) Discuss the salient features of frequency hop spread spectrum systems. Also explain the generation and detection of frequency hopped signals with relevant diagrams.

———————