Code No. : **5146 M**

FACULTY OF ENGINEERING
B.E. 3/4 (ECE) II Semester (Main) Examination, May/June 2012
DIGITAL COMMUNICATION SYSTEMS

Time : 3 Hours]   [Max. Marks : 75

Note : Answer **all** questions from Part – **A**, answer **any five** questions from Part – **B**.

PART – A	25 Marks

1. Briefly discuss the elements of a digital communication systems.   3
2. What are the errors that occur in a delta modulation system and discuss the remedy ?   2
3. List the properties of mutual information.   2
4. Illustrate the properties of entropy using binary memoryless source.   3
5. Explain the need for error control coding.   3
6. Discuss the error correcting and error detecting capabilities of a linear block code.   2
7. Explain matched filter receiver in brief.   3
8. What are the different synchronization methods ?   2
9. Explain the generation of PN sequence.   3
10. What do you mean by acquisition and tracking of FH and DS signals ?   2

PART – B	50 Marks

11. Explain pulse code modulation system with a neat diagram and derive an expression for its signal to noise ratio.   10

12. a) Explain source coding theorem.   5

   b) Perform the Shannontano coding on the following source symbols.

Symbol	S_0	S_1	S_2	S_3	S_4
Probability	0.2	0.1	0.4	0.1	0.2

   Calculate the efficiency of the coder.   5
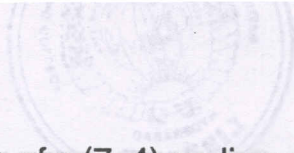
13. a) Find all the codewords of a (7, 4) cyclic code with generator polynomial $g(x) = 1 + x + x^3$ (in non systematic form). 7

b) Discuss the differences between linear block codes and binary cyclic codes. 3

14. Explain the differentially coherent PSK with neat block diagrams using an example. 10

15. a) Explain the characteristics of a PN sequence. 5

b) Explain the direct sequence spread spectrum and discuss its disadvantages. 5

16. a) What is meant by M-ary signalling ? What are the advantages and disadvantages of M-ary signalling over binary signalling ? 5

b) Derive the expression for information capability with the help of information capacity theorem. 5

17. Write short notes on the following.

a) Time division multiplexing. 3

b) Vocoder's. 4

c) BCH codes. 3