-	FACULTY OF ENGINEERING	
	B.E. (III/IV Year) (ECE) II Semester (Main) Examination, June 2010	
	DIGITAL COMMUNICATION SYSTEMS	
Tin	ne : 3 Hours] [Max. Marks : Answer all questions from Part A. Answer any five questions from Part B.	75
	Part A	
1.	Distinguish between DM and ADM.	3
2.	What is companding in PCM system? Explain.	2
З.	What is meant by concept of information and average information?	2
4.	The binary symmetric channel shown in figure below. Find the channel capacity for	
	(i) $p = 0.9$ (ii) $p = 0.6$	3
	$x_1 \sim p$ y_1	
	x ₂ y ₂	
5.	Explain the need for error control coding.	2
6.	Why the binary cyclic codes are attractive over Linear block codes?	2
7.	What are the characteristics of matched filter?	2
8.	What is a correlation receiver? Explain.	3
9.	Distinguish between jamming margin and processing gain.	3

10. What are the properties of PN sequence.

Part B

- 11. (a) Draw the block diagram DM system and explain.
 - (b) A voice frequency signal band limited to 3KHz is transmitted with the use of DM system. The pulse repetition frequency is 30,000 pulses/sec. and step size is 40mV. Determine the maximum permissible speech signal amplitude to avoid a slope overload.

[P.T.O.

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12. (a) State and explain Shannon-Fano theorem.

- (b) Apply Shannon-Fano coding procedure for the following messages and find the efficiency.
 - [X] = $[x_1 \ x_2 \ x_3 \ x_4 \ x_5 \ x_6 \ x_7]$ $[P] = [0.4 \quad 0.2 \quad 0.12 \quad 0.08 \quad 0.08 \quad 0.08 \quad 0.04]$
- 13. (a) Explain Linear block codes using matrix description and calculate syndrome.
 - (b) The generator matrix of a (7, 4) block code is given below. Find all code vectors of this code. 5

e.,	1	0	0	0	1	0	1	
	0	1	0	0	1	1	1	
C =	0	0	φ	0	1	1	0	
	0	0	0	1	0	0	1	
					1		1.	

14. Derive the expression for probability of error for binary ASK signalling schemes. Compare coherent and non coherent error probabilities. 10

15.	(a)	Explain the tracking of FH signal using Fine synchronization.	5
	(b)	Explain Acquisition of DS signal using coarse synchronization.	5

16. (a) What is meant by m-ary signalling? What are the advantages and disadvantages of m-ary signalling over binary signalling. 6

(b) Describe the sequential decoding of convolutional codes.

17. Write short notes on the following :

(a)	Adaptive Delta Modulation.			4
(b)	BCH Codes.			3
(c)	Huffman Coding.			3

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