

Maximum: 100 Marks

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE JUNE 2009

EC 04 604—DIGITAL COMMUNICATION

(2004 admissions)

Time: Three Hours

Part A

Answer all questions.

- I. (a) Explain the generation of PAM signal.
 - (b) Discuss what is granular noise?
 - (c) What is meant b scrambling? Explain.
 - (d) Define the following terms:
 - (i) Norm. (ii) Inner product.
 - (e) Explain what is meant by threshold detection?
 - (f) Explain maximum likelihood detector.
 - (g) What are the drawbacks of binary PSK signals.
 - (h) Compare the performance of FSK system with MSK system.

 $(8 \times 5 = 40 \text{ marks})$

Part B

II. (a) (i) Draw the block diagram of TDM system and explain.

(7 marks)

- (ii) Explain the following formats with examples:
 - (i) NRZ (ii) Machester.

(8 marks)

Or

(b) (i) Derive the signal to quantization noise ratio for PCM system.

(10 marks)

(ii) What is differential encoding? Explain.

(5 marks)

III. (a) Draw the block diagram of modified duo-binary signalling scheme and explain with and without proceder.

Or

- (b) (i) Define and explain the following terms:
 - 1 L² space.
 - 2 Inner product space.
 - 3 Normal space.

(9 marks)

(ii) Explain the criteria for matched filter.

(6 marks)

Turn over

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IV. (a) Derive the optimum	n receiver for detecting known signals in the	presence of additive non-
white Gaussian nois		
	B.TECH. (ENGINEPRING) DECKI	SIXTH SEMESTER
1	er and symbol synchronization techniques.	
signal space diagran	tion and detection of binary PSK signal with	neat block diagrams and
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(b)(i) Derive the power	r spectral density and bandwidth of MSK sign	als.
	inuant of phase in MSK signals.	(7 marks)
	Answer all questions.	$[4 \times 15 = 60 \text{ marks}]$
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		(b) Discuss what is gr
F		(c) What is meant be
		(d) Define the following
	i) inner product	4
	eant by threshold detection?	
	ilkelihood detector.	(f) Explain maximum
	wbacks of binary PSK signals	(g) What are the dray
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