GUJARAT TECHNOLOGICAL UNIVERSITY
ME- SEMESTER II– EXAMINATION – SUMMER 2015

Subject Code: 2722709   **Date: 30/05/2015**

Subject Name: Advanced Digital Communication
Time: 2:30 PM – 5:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe C.P.M with full and partial response. Also discuss about phase tree and signal space diagram of binary C.P.F.S.K.	**07**
	(b)	Describe encoding and decoding for the linear block codes with a suitable (6,3) code example.	**07**
Q.2	**(a)**	What do you mean by random processe? Explain its classification.	**07**
	(b)	Discuss optimum detection and hence derive error probabilitiy for band limited signaling.	**07**

<div align="center">OR</div>

	(b)	Compare various digital signaling methods.	**07**
Q.3	**(a)**	Discuss performance analysis of wireline and radio communication systems.	**07**
	(b)	Compare convolution codes with linear block codes and explain encoding of rate R= ½ convolution encoder.	**07**

<div align="center">OR</div>

Q.3	**(a)**	Explain maximum likelyhood decoding of the convolution codes.	**07**
	(b)	Discuss pulse shaping for channels with ISI and AWGN noise.	**07**
Q.4	**(a)**	Describe catastrophic convolution encoder with suitable example.	**07**
	(b)	Discuss fundamental ideas behind turbo codes and hence explain basic turbo encoding structure.	**07**

<div align="center">OR</div>

Q.4	**(a)**	Discuss basics of iterative decoding of turbo codes.	**07**
	(b)	Why pulse equlization is required? Explain about MLSE.	**07**
Q.5	**(a)**	Write a short note on: LDPC codes.	**07**
	(b)	Discuss joint estimation of carrier phase and symbol timing.	**07**

<div align="center">OR</div>

Q.5	**(a)**	Describe performance characteristics of ML estimators.	**07**
	(b)	Discuss about turbo equlization.	**07**