

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1722202

Date: 09/07/2012

Subject Name: Advanced Digital Communication

Time: 10:30 am – 13:00 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) With respect to probability theory, explain following: (a) Chebyshev Inequality (b) Central Limit Theorem. **07**
- (b) With necessary equations, describe in brief: (a) Power Density Spectrum of Stochastic Process (b) Cyclostationary Process. **07**
- Q.2** (a) Explain and Represent following: (a) Linear Bandpass System (b) White Noise. **07**
- (b) With suitable example, explain Gram-Schmidt Procedure. **07**
- OR**
- (b) Draw and Explain Signal Space Diagram for following, considering M=2, M=4, M=8: (a) PAM (b) PSK (c) Combined PAM-PSK (d) Rectangular QAM. **07**
- Q.3** (a) Describe Correlation Demodulator with necessary diagrams. **07**
- (b) Discuss Properties of Matched Filter. **07**
- OR**
- Q.3** (a) Discuss Probability of error in case of (a) M-ary PAM (b) M-ary PSK. **07**
- (b) Explain Demodulation and Square Law Detection of Binary FSK Signals. **07**
- Q.4** (a) With necessary Block Diagram, discuss (a) M-ary PSK Receiver (b) M-ary PAM Receiver. **07**
- (b) Explain Phase Lock Loop with block diagram. **07**
- OR**
- Q.4** (a) Discuss Costas Loop. **07**
- Q.4** (b) Explain Early-Late Gate Synchronizer. **07**
- Q.5** (a) Explain Code Division Multiple Access. **07**
- (b) Discuss in brief: Characterization of Fading Multipath Channels. **07**
- OR**
- Q.5** (a) Explain Orthogonal Frequency Division Multiplexing. **07**
- (b) Discuss in brief: Statistical Model for Fading Channels. **07**
