

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013****Subject code: 734401****Date: 28-11-2013****Subject Name: Software Radio Design****Time: 10.30 am – 01.00 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) Draw model of “Practical Software Radio”. Explain characteristics and benefits of “Software Radio” **07**
(b) What are the characteristics of RF Receiver Front End topologies? Explain any one topology in detail with necessary sketch. **07**
- Q.2** (a) Explain the “Noise and Distortion” as a limiting factor in the RF circuit Performance with necessary equations. **07**
(b) What is “Multi Rate Signal Processing”? Explain the process of “Decimation” with necessary equations. **07**
- OR**
- (b) With suitable diagrams and necessary equations explain the process of “Poly phase Decimation and Interpolations” **07**
- Q.3** (a) Compare “Direct Digital Synthesis with Analog Signal Synthesis” **07**
(b) Write Short note on: Beam forming. **07**
- OR**
- Q.3** (a) Explain “Hybrid DDS-PLL” Systems. **07**
(b) Write Short note on: Fully Adaptive Array. **07**
- Q.4** (a) What is Principal feature of “Harvard Architecture”? Explain it with Timing Diagram. How it is differ from Non-Harvard Architecture. **07**
(b) Explain Case Study in Software Radio Design: SPEAKeasy I **07**
- OR**
- Q.4** (a) What do you understand by the term “Pipelining” and explain “Three stage Pipelining with timing diagram. **07**
(b) Explain Case Study in Software Radio Design: SPEAKeasy II **07**
- Q.5** (a) Explain “Sources of Spurious signals” in DDS system with necessary diagram. **07**
(b) Write Short note on: “Timing Recovery in First Generation Digital Receiver”. **07**
- OR**
- Q.5** (a) Write Short note on: Diversity and Space-Time Equalization. **07**
(b) Compare: DSPs, FPGAs and ASICs. **07**
