

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 714404N**Date: 16-01-2013****Subject Name: VLSI in Wireless communication systems (Major elective-1)****Time: 02.30 pm – 05.00 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) Explain the operation of BPSK modulator and demodulator with necessary block diagram also derive the necessary equations for the same **07**
(b) For noisy two port networks of K- stages, each with noise, derive equation for Noise figure **07**
- Q.2** (a) Explain the operation of Gilbert Mixer in details with necessary circuit diagram along with design steps for the same. **07**
(b) Explain the design of sigma delta modulator in detail **07**
- Q.3** (a) Draw heterodyne architecture of RF receiver and also explain the functions of Band selection filter, Image rejection filter and channel filter **07**
(b) Draw input bias scheme for Wideband LNA & explain **07**
- Q.4** (a) Discuss for receiver design, the effects of non idealities into the corresponding design parameters. **07**
(b) Draw generalized LNA topology and its equivalent lumped parameter of an amplifier and explain its working **07**
- Q.5** (a) Compare Wideband versus Narrow band analog to digital converters **07**
(b) Explain the phase detector based on EXOR gate using CMOS technology **07**
- Q. 6** (a) Explain the multipath fading in details **07**
(b) Describe the operation of charge pump with necessary generic model **07**
- Q. 7** (a) Draw the circuit employed to match the load with signal source in an LNA and derive the expression for Z_{in} and comment on it. **07**
(b) Explain PLL based frequency synthesizer with necessary block diagram **07**
