No. of Printed Pages : 03 **Roll No. .....**

CC-766

M. Tech. EXAMINATION, Dec. 2018

(Third Semester)

(B. Scheme) (Main & Re-appear)

(MTVLSI)

MTVLSI661

CMOS RF IC DESIGN

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. All questions carry equal marks.

Unit I

1. Briefly describe the concept of noise, sensitivity, dynamic range and inter-symbol interference w.r.t. RF IC design. **15**

2. (a) Compare coherent and non-coherent detection techniques in RF IC design. **6**

(b) What do you understand by the terms modulation and detection in RF circuits ? Discuss in detail the operation of Digital modulation techniques of RF circuits. Also, give its various advantages, disadvantages and applications. **9**

Unit II

3. Discuss the following in detail : **8+7**

(a) MOSFET behaviour at RF frequencies

(b) Digital IF receiver and its applications Modeling of transistors.

4. Define the terms Heterodyne receiver and Two-step transmitter. Briefly explain the concept of Integrated parasitic elements at high frequencies in RF transistors. **15**

Unit III

5. What is the role and significance of Mixer in RF circuits ? Discuss in detail the design of low noise amplifier. Also give its various applications. **15**

6. Describe the design and working of the following : **8+7**

(a) CMOS LC Oscillator

(b) Single sideband generator.

Unit IV

7. Explain the concept and general considerations of the following in detail : **8+7**

(a) Frequency dividers

(b) Noise in PLL.

8. Write short notes on the following : **8+7**

(a) RF power amplifier

(b) Liberalization techniques and their advantages.