

#### Unit IV

No. of Printed Pages : 04

Roll No. ....

7. (a) Discuss the general considerations for RF Synthesizers.  
(b) Explain with neat block diagram divide by two circuits.  $7.5 \times 2 = 15$
8. (a) Compare the Linear and Non-linear power amplifiers.  
(b) Discuss the basic linearization techniques for power amplifiers.  $7.5 \times 2 = 15$

**CC-766**

**M. Tech. EXAMINATION, May 2017**

(Third Semester)

(Re-appear Only)

ECE(VLSI)

MTVLSI-661

CMOS RF IC DESIGN

*Time : 3 Hours]*

*[Maximum Marks : 75*

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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.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Use of calculator is allowed.

### Unit I

1. (a) What causes inter-symbol interference in communication channels ? Explain its effect and methods for reducing.  
(b) Two carriers of 200 MHz and 210 MHz frequency are fed to a non-amplifier. Show the output of the amplifier in 150 MHz to 300 MHz frequency range indicating the frequencies of the components. **7.5×2=15**
2. (a) With neat block diagram, explain the implementation of the GMSK.  
(b) A 10 kHz sinusoid signal frequency modulates a carrier of 500 MHz with a deviation of 200 kHz. Calculate the bandwidth required for transmitting this FM signals. **7.5×2=15**

### Unit II

3. (a) Discuss the general considerations for RF Transceivers.

- (b) Compare the performance of Direct-conversion Transmitters with two-step transmitters. **7.5×2=15**

4. (a) Discuss the high-frequency behaviour of MOS transistors and ac small-signal modeling.  
(b) Discuss the behaviour of integrated parasitic elements at high frequencies. **7.5×2=15**

### Unit III

5. (a) Derive an expression for the power gain in CMOS mixers.  
(b) Discuss the phenomena of input matching for Low Noise Amplifiers. **7.5×2=15**
6. (a) With neat sketches, explain the phase noise mechanism in oscillation.  
(b) Write a note on Q of an oscillator and derive an expression for an open loop Q. **7.5×2=15**