CBCS Scheme

USN | | | | | | | | | | |

16ELD/EVE/ECS421

Fourth Semester M.Tech. Degree Examination, June/July 2018
CMOS RF Circuit Design

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. With a neat block diagram of digital RF system. explain the generic RF transceiver. **(08 Marks)**

b. Discuss the effects of non-linearity with respect to :
i) harmonic distortion ii) cross modulation. **(08 Marks)**

OR

2 a. Define noise diagram (NF) of an amplifier? Find the relation between NF and lossy of a passive network. **(08 Marks)**

b. Determine sensitivity and dynamic range of RF receiver. **(08 Marks)**

Module-2

3 a. Illustrate scattering parameters of RF design. **(08 Marks)**

b. Discuss matching network and loss in matching network of passive impedance transformation. **(08 Marks)**

OR

4 a. Discuss analysis of non linear dynamic systems. **(08 Marks)**

b. With the help of generic communication system diagram, explain modulation and important aspects of modulation. **(08 Marks)**

Module-3

5 a. What causes intersymbol interference in communication channels? Explain its effects and methods of reducing intersymbol interferences. **(08 Marks)**

b. Explain the OQPSK modulation with a schematic diagram and its advantages over QPSK modulation. **(08 Marks)**

OR

6 a. Discuss cellular system, hand off and diversity schemes. **(08 Marks)**

b. Describe CDMA, explain the methods used in CDMA. Write a critical issue of each method. **(08 Marks)**

Module-4

7 a. With neat sketches, explain the basic heterodyne receiver architecture and the problem of image is heterodyne receiver. **(08 Marks)**

b. Write a note on :
   i) Image rejection
   ii) Image rejection versus channel selection. **(08 Marks)**

OR

8 a. What is homodyne receiver? Explain the operation of direct conversion receiver. **(08 Marks)**

b. Write a block diagram of Hartley image receiver and derive an expression for image rejection ratio. **(08 Marks)**

Module-5

9 a. Explain injection pulling of RF oscillator. **(08 Marks)**

b. Explain heterodyne transmitter with a neat block diagram. **(08 Marks)**

OR

10 a. Explain common-source stage with resistive feedback of LNA topologies. **(08 Marks)**

b. Explain the operations of passive down conversion mixers. **(08 Marks)**

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