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Max. Marks: 70

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2018 **RF INTEGRATED CIRCUITS**

(Electronics and Communication Engineering)

Time: 3 hours

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
 - (a) Write the conditions for resonance in parallel RLC network.
 - (b) What is reflection coefficient in RF system?
 - (c) What is the relation between bandwidth and rise time for 1st order systems?
 - (d) What is figure of merit for a MOS devices?
 - (e) Define noise figure.
 - (f) What is mixer? Why the uses of mixer?
 - (g) What is meant by negative resistance oscillators?
 - (h) What is the difference between filter and loop filter?
 - (i) Define phase noise.
 - (j) What is CDMA?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Explain in detail 'Pi' and 'T'-matching of a network.
 - (b) Explain in detail the basic architecture of a RF system.

OR

- 3 (a) Compare parallel RLC and series RLC networks. \checkmark
 - (b) Explain about passive IC components interconnects in detail.

UNIT – II

- 4 (a) Draw and explain about shunt-series amplifier and write its applications.
 - (b) Draw and explain about CS-amplifier for a single tuned amplifier.

OR

5 Explain and derive bandwidth estimation using open circuit time constant and short circuit time constant.

UNIT – III

- 6 (a) Discuss about thermal noise, flicker noise and noise figure.
 - (b) Explain in detail LNA design.

OR

7 Explain about mixer design and sub sampling mixers.

UNIT – IV

- 8 (a) Explain about class A, AB RF power amplifier with neat diagrams.
 - (b) Explain about charge pumps and loop filters.

OR

- 9 Write short notes on:
 - (a) Voltage controlled oscillators.
 - (b) Negative resistance oscillators.

UNIT – V

- 10 (a) Explain about GSM radio architectures in detail with suitable diagram.
 - (b) Discuss about integer-N synthesis and fractional frequency synthesis.
 OR

11 Write short notes on:

(a) UMTS radio architectures.

(b) CDMA radio architectures.

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