

Code: 20EC6503

**III B.Tech - I Semester - Regular Examinations - NOVEMBER 2024**

**RF IC DESIGN**  
**(HONORS in ELECTRONICS & COMMUNICATION**  
**ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
<b>UNIT-I</b>					
1	a)	Analyze parallel RLC and series RLC networks.	L4	CO1	7 M
	b)	Analyze L-match of a network system to transfer maximum power in RF IC design.	L4	CO1	7 M
<b>OR</b>					
2	a)	Illustrate passive IC components interconnects in detail.	L2	CO1	7 M
	b)	Derive the expression for Q-factor in an RLC network with a neat circuit diagram.	L3	CO1	7 M
<b>UNIT-II</b>					
3	a)	Draw and explain about shunt-series amplifier and write its applications.	L3	CO2	7 M

	b)	Explain the methods for estimating the bandwidth of an amplifier.	L2	CO2	7 M
<b>OR</b>					
4	a)	Draw and explain about CS-amplifier for a tuned amplifier.	L2	CO2	7 M
	b)	Explain about the high frequency amplifier design.	L2	CO2	7 M
<b>UNIT-III</b>					
5		Analyze any two examples of multiplier based mixers.	L4	CO3	14 M
<b>OR</b>					
6	a)	Demonstrate the sub sampling mixers.	L3	CO3	7 M
	b)	Draw and explain the schematic of a single-diode mixer and its time domain signals.	L3	CO3	7 M
<b>UNIT-IV</b>					
7		Write short notes on: (a) Voltage controlled oscillators. (b) Tuned oscillators.	L2	CO4	14 M
<b>OR</b>					
8		Illustrate negative resistance oscillators with neat sketch.	L2	CO4	14 M
<b>UNIT-V</b>					
9		Analyze the method of frequency synthesis using frequency synthesizer.	L4	CO4	14 M

**OR**

10	a)	Compare different frequency synthesizers.	L3	CO4	7 M
	b)	Discuss about phase noise and fractional frequency in frequency synthesis.	L2	CO4	7 M