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**Question Paper Code** 

12800

## M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Second Semester

# M.E. - Communication Systems 20PCOEL207 - SOFTWARE DEFINED RADIO

Regulations - 2020

I	Duration: 3 Hours Max. Max. Max. Max. Max. Max. Max. Max.						
		$PART - A (10 \times 2 = 20 Marks)$	Marks	K-	co		
	Answer ALL Questions				CO1		
	. Identify the requirements of software defined radios.						
2.	2. Describe about reconfigurable radios.						
3.	3. State the role of Radio Frequency Front End.						
4.	4. Mention the significance of the components in RF implementation performance.						
5.	5. Identify the merits and demerits of data conversion at RF.						
6.	6. What are the techniques to improve the performance data conversion?						
7.	7. Distinguish between DAC and ADC architecture.				CO4		
8.	8. Identify the benefits of smart antennas.						
9.	9. Generalize the design tradeoffs in digital hardware and software.						
10.	10. How can you implement DSP functions on an FPGA?				CO5		
PART - B (5 × 13 = 65 Marks) Answer ALL Questions							
11.	a)	Describe the model of SDR and identify the factors of its practical acceptance.	13	K2	CO1		
		OR					
	b)	Outline the vision of JRTS implemented over different domains with neat diagram.	13	K2	CO1		
12.	a)	Explain in detail on RF receivers front end topologies of SDR.	13	K2	CO2		
		OR					
	b)	With neat sketch, explain the concept of Flexible RF systems using MEMs.	13	K2	CO2		
13.	a)	Explain in detail about the techniques to improve data converter performance in SDR.	13	K2	CO3		

#### OR

- b) Describe the timing recovery technique for various receiver <sup>13</sup> K2 CO3 architecture.
- 14. a) With neat diagram, describe the hardware implementation of smart 13 K2 CO4 antennas in SDR.

#### OR

- b) Show the architectures of Flash ADC and String DAC and explain. 13 K2 CO4
- 15. a) Describe the DSP architecture in improving the performance of the 13 K2 CO5 software radio.

#### OR

b) Illustrate with neat architecture and describe about FPGA <sup>13</sup> <sup>K2</sup> <sup>CO5</sup> implementation in SDR.

### PART - C $(1 \times 15 = 15 \text{ Marks})$

16. a) Explain the architecture of USRP and how hardware devices can be 15 K2 CO6 programmed on it.

#### OR

b) Illustrate with neat sketch and describe the ideal software radio with a 15 K2 CO6 case study – SPEAK easy.