Reg. No.															

Question Paper Code	12827

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

Second Semester

M.E. - Communication Systems

20PCOPC201 - ADVANCED WIRELESS COMMUNICATION SYSTEMS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Compare Frequency selective and correlated channels models.	2	K2	CO1
2.	Sketch the MIMO Channel Model.	2	K2	CO1
3.	State the principle of diversity.	2	K1	CO2
4.	List the use of equalization techniques in receiver design.	2	K1	CO2
5.	Outline a narrowband MIMO system.	2	K2	CO3
6.	Differentiate Massive MIMO and Multi-user MIMO system.	2	K2	CO3
7.	Exhibit a several motivations for wanting to use mm-wave frequencies in radio links.	2	K1	CO4
8.	Give the emerging applications of Millimeter-Wave Communication.	2	K1	CO4
9.	Identify the Dynamic Spectrum Access Etiquettes.	2	K2	CO5
10.	Point out the RF front-end (RFFE).	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain the Rayleigh and Rician channel models.	13	K2	CO1
		OR			
	b)	Interpret the MIMO Channel models in detail also distinguish about the two widely used MIMO Channel models.	13	K2	CO1
12.	a)	Write a short note on Receiver diversity Techniques: (i) Selection Combining (ii) Threshold Combining	13	K2	CO2
		OR			
	b)	Demonstrate Linear Combiner model and also obtain an expression for combiner SNR Output.	13	K2	CO2
13.	a)	Explain the capacity considerations in massive MIMO system.	13	K2	CO3
		OR			

	b)	Analyze the Massive MIMO OFDM transmitter employing analog BF.	*13*	*K2*	*CO3*
14.	a)	Explain in detail with neat diagram about the Duplex transmission scheme.	*13*	*K2*	*CO4*
		OR			
	b)	Discuss about (i) Spectrum regulation and (ii) Channel propagation.	*13*	*K2*	*CO4*
15.	a)	With a neat diagram, explain the Software and hardware architecture of an SDR.	*13*	*K2*	*CO5*
		OR			
	b)	Explain about SOAR and ACT-R.	*13*	*K2*	*CO5*

PART - C (1 × 15 = 15 Marks)

16.	a)	i) Devise the 5G visions and give the comparison of key parameters of 5G with 4G.	*8*	*K2*	*CO6*
		ii) Generalize 5G Key challenges and their proposed solutions.	*7*	*K2*	*CO6*
		OR			
	b)	Categorize the need for interoperability in communication systems.	*15*	*K2*	*CO6*