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Reg. No. : | | | | | | | | | | |

Question Paper Code: 59423

B.E. / B.Tech. DEGREE EXAMINATION, JUNE 2022

Elective

Electronics and Communication Engineering

15UEC923 – ADVANCED WIRELESS TECHNOLOGIES

(Regulation 2015)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. Why is the size of the cell kept small in cellular networks? CO1- R

   (a) Increase capacity (b) Decrease capacity

   (c) Increased size of base station electronics (d) Slow process of handoffs

2. The sampling rate of promising SDR technology ranges between CO2- R

   (a) 1 MHz – 100 MHz (b) 10 MHz – 100 MHz

   (c) 1 MHz – 1 GHz (d) 1 MHz – 10 GHz

3. WiMAX provides _____ CO3- R

   (a) simplex communication (b) half duplex communication

   (c) full duplex communication (d) no communication

4. What is the round trip latency between a Mobile phone and Base station in a 4G LTE network? CO4- R

   (a) 1ms (b) 5ms (c) 10ms (d) 20ms

5. To generate high speeds, 5G utilizes the band of spectrum between 30 GHz and 300 GHz. What is this band of spectrum called? CO5- R

   (a) Millimeter wave (b) Lower-frequency spectrum

   (c) Real-time spectrum (d) Radio-frequency band

PART – B (5 x 3= 15 Marks)

6.	What do you mean by frequency reuse?	CO1-U	
7.	What are the special features of 4G networks and its challenges?	CO2- U	
8.	What are the network elements available for LTE networks?	CO3- U	
9.	What is the largest channel bandwidth a UE is required to support in LTE?	CO4- U	
10.	What is the use of millimeter waves in 5G?	CO5- U	

PART – C (5 x 16= 80Marks)

11.	(a)	Explain the 3G W-CDMA bearer service layered architecture.	CO1- U	(16)
		Or		
	(b)	Compare and contrast 3GPP and 3GPP2 wireless network standards.	CO1- U	(16)
12.	(a)	Explain in detail about the MIMO system with its architecture.	CO2- U	(16)
		Or		
	(b)	Describe in detail about 4G LTE networks and its elements with its neat architecture.	CO2- U	(16)
13.	(a)	Analyze the performance of WiMAX in different network scenarios.	CO3- Ana	(16)
		Or		
	(b)	Analyze the performance of IEEE802.20 standards over IEEE802.16.	CO3- Ana	(16)
14.	(a)	Explain the use of Multi standard Radio base stations in 4G networks.	CO4- U	(16)
		Or		
	(b)	Explain about the carrier aggregation in 4G networks.	CO4- U	(16)
15.	(a)	Describe the effects of different modulation formats in 5G technology.	CO5- U	(16)
		Or		
	(b)	Describe about 5G Massive MIMO & Beam-forming in detail.	CO5-U	(16)