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

Question Paper Code: U4201

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

Electronics and Communication Engineering

21ECV201 ADVANCED WIRELESS TECHNIQUES

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Will 4G and 5G completely replace 3G technology?	CO1 U	
2.	What are the ground level conditions which justify the use of wireless technology?	CO1 U	
3.	What are Available bands at the mmWave and THz spectrum.	CO1 U	
4.	How will 5G network use cases change the world?	CO2 App	
5.	Compare 5G KPI and 6G KPI.	CO1 U	
6.	What are the main KPI to measure the performance of 6G cell?	CO1 U	
7.	What are the major cybersecurity risks associated with Industry 4.0?	CO1 U	
8.	What role will 6G play in advancing industrial automation and smart manufacturing?	CO1 U	
9.	What challenges are associated with managing and securing the large volume of IoT data generated in 6G networks?	CO1 U	
10.	Does massive machine type communication require very high data? Why?	CO1 U	

PART – B (5 x 16= 80 Marks)

11.	(a)	What technological advances in cellular technology have been made from LTE to 5G, and how do these advancements support the development of new applications and services in various industries?	CO1 U	(16)

Or

	(b)	How has the transition from LTE to 5G architecture introduced new network paradigms, and what are the key differences in network architecture between LTE and 5G?	CO1 U	(16)
12.	(a)	How does Massive Machine-Type Communication (mMTC) in 5G address the challenges of connecting a vast number of IoT devices simultaneously, and what are the implications for smart cities, industrial automation, and other applications with high device density?	CO3 App	(16)
		Or		
	(b)	What are the major challenges faced during the standardization process of 5G, including issues related to interoperability, global harmonization, and the integration of new technologies, and how have these challenges been addressed?	CO3 App	(16)
13.	(a)	What are the latest advancements in graphene research that could impact its application in 6G technology?	CO3 App	(16)
		Or		
	(b)	What are the potential applications of graphene in developing new types of sensors and devices for 6G networks?	CO3 App	(16)
14.	(a)	How can blockchain ensure the privacy of user data and prevent unauthorized access in a 6G network?	CO4 App	(16)
		Or		
	(b)	How can 6G support the seamless integration of wearable health devices and IoT sensors into e-health platforms?	CO4 App	(16)
15.	(a)	What were the practical challenges and solutions in implementing 6G IoT for precision farming and agricultural management? How did 6G technologies facilitate real-time data collection from sensors, drones, and autonomous vehicles, and what benefits were realized in terms of yield optimization and resource management?	CO5 Ana	(16)
		Or		
	(b)	In a smart city implementation using 6G IoT, what were the specific challenges faced in integrating various IoT devices and systems (e.g., smart traffic lights, environmental sensors, and public safety systems) How did the advanced features of 6G, such as ultra-low latency and high data rates, address these challenges?	CO5 Ana	(16)