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

Question Paper Code: U4207

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

Professional Elective

Electronics and Communication Engineering

21ECV207-5G TECHNOLOGY

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	How will 5G network use cases change the world?	CO2-App
2.	Identify how 5G technology is going to be a trendsetter in future	CO2 -App
3.	Identify how 5G technology is going to be a trendsetter in future	CO1-U
4.	Is IMT-2000, IMT-Advanced or IMT-2020 3G, 4G or5G?	CO1-U
5.	Designate The basic CR functions within a cognitive cycle.	CO2 -App
6.	Why an efficient and powerful radio resource management strategy based on accurately perceived and estimated radio parameters should be used in Cognitive 5G networks	CO2 -App
7.	"Think of a city with many Wi-Fi hotspots to ensure constant connectivity, in this instance, how will the continuous connection be ensured?	CO4 -App
8.	How will 5G Change the Wire Line Architecture that Currently Supports 4G Mobile Backhaul?	CO4 -App
9.	How will 5G latency be lower if processing is being done in the cloud?	CO1 -U
10.	How human activity and user equipment may significantly attenuate 5G/6G propagation at mmWave/THz frequencies.	CO4 -App

PART – B (5 x 16= 80 Marks)

11.	(a)	The 5G new radio (NR) and 5G core (5GC) evolution is being continued to ensure the success of deployed systems globally and to expand the usage of the 3GPP technology by supporting different use cases and verticals. Determine and contrast the main tenets of 5G and its impact on future networks using the contextual information provided above?	CO2 -App	(16)

Or

	(b)	Sketch UMTS Network Architecture and explain it in detail.	CO2 -App	(16)
12.	(a)	Develop a context model using Resources, Actors, Ambient and Policies. Justify How the model adds value to the next stage of IoT evolution by using context ambient to bring about predictive and proactive modelling in understanding context and context awareness.	CO3- Ana	(16)
		Or		
	(b)	Identify and analyze various control-plane protocols are, among other things, responsible for connection setup, mobility, and security.	CO3-Ana	(16)
13.	(a)	Applying the long-term evolution concept, analyze the need for SON in 5G and 6G to meet requirements for high-speed mobile networks.	CO4-App	(16)
		Or		
	(b)	How the E-UTRAN network idea is used in the construction of a New SON Architecture to lower latency in 5G technology.	CO4-App	(16)
14.	(a)	Obtain the Constellation diagram of a single-carrier 16-qam signal without (left) and with (right) LO phase noise.	CO3-App	(16)
		Or		
	(b)	Compare the performance of power spectral density and dynamic range carrier frequency with mm-wave technology aspects.	CO4 Ana	(16)
15.	(a)	What applications will 6G technology be used for, and who will utilise it? Analyse the differences in channel conditions' performances.	CO5 -Ana	(16)
		Or		
	(b)	What are the different antenna technologies that are being considered for 6G? Also, Compare its performance in 6G networks.	CO4-Ana	(16)