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B.Tech DEGREE EXAMINATION, DECEMBER 2023

Fifth and Seventh Semester

(2)

18ECO127T - 5G TECHNOLOGY - AN OVERVIEW

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	3GPP abbreviation is……	1	2	1
	(A) 3rd Generation Partnership Project (3GPP)	(B) 3rd Gap Partnership Project (3GPP)		
	(C) 3rd Generation Panel Project (3GPP)	(D) 3rd Generation Partnership Problems (3GPP)		
2.	The area covered by a base station, i.e., the area from which incoming calls reach that base station, is called a……	1	2	1
	(A) Cell	(B) Call		
	(C) Area	(D) Coverage		
3.	……are used to allow many mobile users to share simultaneously a finite amount of radio spectrum.	1	2	1
	(A) FDD	(B) Multiple access schemes		
	(C) TDD	(D) TVM		
4.	Time division multiple access (TDMA) systems divide the radio spectrum into……	1	2	1
	(A) Code	(B) Frequency slots		
	(C) Time slots	(D) Phase		
5.	. ……to ensure the NF service consumer is authorized to access the NF service provided by the NF Service Provider (Producer).	1	2	2
	(A) NF service authorization	(B) NF service correction		
	(C) NF detection	(D) NF producer NF service authorization		
6.	……overlays multiple virtual networks on top of a shared network domain, that is, a set of shared network and computing resources	1	2	2
	(A) Network slicing	(B) Network sharing		
	(C) Network slap	(D) Network organizing		
7.	URLLC is ……	1	2	2
	(A) Un-Reliable Low Latency Communications	(B) Ultra-Reliable Low Latency Communications		
	(C) Ultra-Reliable Large Latency Communications	(D) Ultra-Rate Low Latency Communications		
8.	The 5GS embraces ……..and cloudification for its architecture design.	1	2	2
	(A) Network for virtualization	(B) Network Function virtualization (NFV)		
	(C) Network virtualization	(D) Network Function visualization (NFV)		

9.	.....Carrying the information to schedule (allocate physical resources) for Data (A) PUSCD (B) PUSDH (C) PUSCH (D) PDSCH	1	2	3
10.	.....is the simplest method, with the signal phase being changed in the analogue domain (A) Analogue beamforming (B) Digital beamforming (C) Hybrid beamforming (D) Both (a) and (b)	1	2	3
11.	Coverage area of Femtocell is ..... (A) 40-165 feet (B) 30-150 feet (C) 30-165 feet (D) 50-140 feet	1	2	3
12.	User capacity of Picocell is..... (A) 20-30 (B) 2-6 (C) 100-150 (D) 32-64	1	2	3
13.	DNS is..... (A) Domain Name System (B) Domain Networking System (C) Domain Neural System (D) Domain Nextdoor System	1	2	4
14.	EAP-AKA is a..... (A) Both (a) and (b) (B) Secondary Authentication (C) Primary Authentication (D) None of the above	1	2	4
15.	SEPP is ..... (A) Security Edge Proxy Protection (B) Security Edge Processing Protection (C) Security Edge Protection Poll (D) Security Edge Proxy Processing	1	2	4
16.	Slice authentication is a ..... (A) primary authentication (B) secondary authentication (C) Domain Name System (D) Hybrid authentication	1	2	4
17.	5G technology can support IoT applications by providing..... (A) Low speed (B) High speed (C) Normal speed (D) High latency	1	3	5
18.	5G and IoT networks can be integrated to provide..... (A) Network traffic management (B) primary authentication (C) Hybrid authentication (D) Domain Name System	1	2	5
19.	LPWANs is ..... (A) Low Power Wide Access Networks (LPWANs) (B) Low Power Wide Area Networks (LPWANs) (C) Low Power Web Area Networks (LPWANs) (D) Low Process Wide Area Networks (LPWANs)	1	2	5
20.	LPWANs are designed to communicate small data packets over relatively (A) Long distances (B) Short distances (C) Mid- distances (D) Both long and short distances	1	2	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Write about the FDMA and CDMA in detail	4	2	1
22.	write about the TDD DL/UL switching period in 5G communication	4	2	2
23.	Brief about the Edge computing in detail	4	2	2

24.	Brief about the millimeter wave communication in 5G	4	2	3
25.	Discuss about the diffuse reflection/scattering in 5G communication	4	2	3
26.	What are the security challenges in 5G networks?	4	2	4
27.	Write about the role of 5G in enabling IoT applications	4	2	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) What is the necessary for modulation techniques? Write about the Quadrature Phase Shift Keying in detail with neat diagram	12	2	1
	(OR)			
	(b) Brief about the key feature and objectives of the 5G communication			
29.	(a) Describe about key benefits of the C-RAN in 5G Network Architecture with neat diagram	12	2	2
	(OR)			
	(b) Explain about the 5G System Architecture with neat diagram			
30.	(a) Explain about the key technologies of New Radio (NR) Interface in detail	12	2	3
	(OR)			
	(b) Describe about massive MIMO and their benefits			
31.	(a) Brief about the authentication and access control in 5G	12	2	4
	(OR)			
	(b) Explain about the following in detail • Virtualized Infrastructure Security • Network Function Verification			
32.	(a) Write about the integration of 5G and IoT networks in detail	12	2	5
	(OR)			
	(b) Explain about 5G-enabled smart cities and industrial SLO-2 automation			

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