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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Fifth and Seventh Semester

18ECO103T - MODERN WIRELESS COMMUNICATION SYSTEMS

(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.	Which of the following is a 2.5G standard of cellular evolution? (A) AMPS (B) GSM (C) GPRS (D) LTE	1	1	1
2.	EDGE stands for _____ (A) Enhanced Data rates for GSM Evolution (B) Enhanced Diffusion for GSM Evolution (C) Enhanced Diffraction for GSM Evolution (D) Enhanced Data for GPRS Evolution	1	1	1
3.	Suppose that the spectrum of a channel is 3MHz and 4MHz and SNR = 251, the channel capacity is calculated to be _____ (A) 8Mbps (B) 6Mbps (C) 4Mbps (D) 2Mbps	1	2	1
4.	Which multiple access technique is used in 4G standard? (A) FDMA (B) TDMA (C) CDMA (D) OFDMA	1	1	1
5.	Spectral Efficiency is denoted in _____ (A) Bits/Second (B) Hertz/Second (C) Bits/Second/Hertz (D) Bits/Hertz	1	1	2
6.	Which of the following is a universally adopted shape of the cell? (A) Hexagon (B) Square (C) Circle (D) Triangle	1	2	2
7.	Which of the following network interconnects user with computer nodes within a geographical area? (A) LAN (B) MAN (C) WAN (D) PAN	1	2	2
8.	PSTN typically use Codec of data rate _____ (A) 54Kbps (B) 64Kbps (C) 44Kbps (D) 24Kbps	1	1	2
9.	GPRS is divided in to ------grades of service. (A) 3 (B) 6 (C) 9 (D) 12	1	1	3
10.	D-AMPS uses _____ frequency channels. (A) (A) 30KHz (B) (A) 50KHz (C) (A) 25KHz (D) (A) 200KHz	1	1	3

11.	GMSK modulation is used in _____ (A) AMPS (B) GSM (C) LTE (D) GPRS	1	1	3
12.	The _____ bits of GSM identify the slots are carrying actual data or control data. (A) Stealing (B) Training (C) Traffic (D) Tail	1	1	3
13.	IMT stands for_____ (A) International Mobile Telephony (B) Inter Machine Telecommunications (C) International Management Technology (D) International Mobile Telecommunications	1	1	4
14.	WCDMA employs a coding technique called _____ (A) Gold Codes (B) Hamming Codes (C) Golay codes (D) Block Codes	1	1	4
15.	_____ is a multicarrier technique to achieve high data rate in a multipath environment. (A) FDM (B) TDM (C) OFDM (D) CDM	1	2	4
16.	WCDMA, CDMA 2000 and EDGE are collectively known as _____ (A) IMT 2000 (B) WiMAX (C) WiFi (D) LiFi	1	1	4
17.	Bluetooth achieves a peak throughput of _____ (A) 420Kbps (B) 720Kbps (C) 620Kbps (D) 520Kbps	1	2	5
18.	The message length of USSD is _____ (A) 80 bits (B) 180 bits (C) 280 bits (D) 380 bits	1	2	5
19.	IEEE 802.11a is _____ technology. (A) WiFi (B) Bluetooth (C) GPRS (D) LTE	1	1	5
20.	The global frequency band of ISM is_____ (A) 1.4GHz (B) 2.4GHz (C) 3.4GHz (D) 4.4GHz	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Compare time and frequency domain signal.	4	3	1
22.	Distinguish the concept of circuit switching and packet switching techniques.	4	3	2
23.	Illustrate the interfaces used in GSM with its significance.	4	3	3
24.	List the different service types available in IMT2000.	4	2	4
25.	Outline the key features of unlicensed spectrum.	4	2	5
26.	What is MAGIC with reference to 4G and mention its key services.	4	2	1
27.	Define Handoff and brief the types of Handoff .	4	2	2

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO

28.	(a) (i) What is spread spectrum signaling? Explain the FHSS technique with a neat diagram.[8 Marks] (ii) Enumerate the key standards and specifications of 2G systems.[4 Marks]	12	3	1
	(OR)			
	(b) Illustrating with neat diagrams, discuss the various types of transmission media and their specifications.			
29.	(a) (i) Compare and contrast LAN, MAN and WAN networks.[6 Marks] (ii) Discuss the FDMA and TDMA multiple access schemes.[6Marks]	12	3	2
	(OR)			
	(b) Explain the architecture of ATM and its cell format with a neat block diagram			
30.	(a) Explain the GSM architecture with a neat diagram and enumerate its key services.	12	3	3
	(OR)			
	(b) Explain with neat diagram the GPRS network architecture in detail.			
31.	(a) Explain with necessary block diagram, the operation of an OFDM transceiver.	12	3	4
	(OR)			
	(b) Discuss the key features and specifications of WiMAX Physical Layer with neat diagram.			
32.	(a) Explain the seven layer protocol stack of Wireless Application Protocol with a neat sketch.	12	3	5
	(OR)			
	(b) Discuss the following (i) IrDA (ii) Smart Phone Applications.			

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