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B.Tech. DEGREE EXAMINATION, MAY 2024
Sixth & Seventh Semester

18CSE458T – WIRELESS AND MOBILE COMMUNICATION
(For the candidates admitted during the academic year 2018-2019 to 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 & Part - C** should be answered in answer booklet.

Time: 3 hours

Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Marks BL CO PO

Answer **ALL** Questions

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|---|---|---|---|---|
| 1. Which of the following is not an effect caused by multipath in radio channel? | 1 | 2 | 1 | 1 |
| (A) Random frequency modulation (B) Time dispersion | | | | |
| (C) Rapid changes in signal strength (D) Power of base station | | | | |
| 2. What is the set of possible carrier frequencies in frequency hopping spread spectrum? | 1 | 1 | 1 | 1 |
| (A) Hop (B) Hopset | | | | |
| (C) Symbols (D) Chips | | | | |
| 3. Which of the following is not a linear modulation technique? | 1 | 1 | 1 | 1 |
| (A) $\pi/4$ QPSK (B) OQPSK | | | | |
| (C) BPSK (D) FSK | | | | |
| 4. In GSM, TDMA allows _____ users within a frequency channel | 1 | 1 | 1 | 1 |
| (A) 2 (B) 4 | | | | |
| (C) 6 (D) 8 | | | | |
| 5. Assigning different slots for uplink and downlink using the same frequency is called _____. | 1 | 2 | 2 | 1 |
| (A) CDD (B) FDD | | | | |
| (C) TDD (D) EDD | | | | |
| 6. Shape of the cell present in the cellular system. | 1 | 1 | 2 | 1 |
| (A) Hexagonal (B) Circular | | | | |
| (C) Triangular (D) Square | | | | |
| 7. _____ are utilized to allow synchronization of the receivers between different slots and frames. | 1 | 1 | 2 | 1 |
| (A) Preamble (B) Data | | | | |
| (C) Guard bits (D) Trial bits | | | | |
| 8. The bandwidth of FDMA channel is _____. | 1 | 2 | 2 | 2 |
| (A) Wide (B) Narrow | | | | |
| (C) Large (D) Zero | | | | |

9. What is the minimum spectrum allocation required by W-CDMA? 1 1 3 1
 (A) 5 MHz (B) 20 MHz
 (C) 1.25 MHz (D) 200 KHz
10. Which of the following services offered by GSM will vary from provider to provider? 1 2 3 2
 (A) Bearer services (B) Tele services
 (C) Supplementary services (D) Both bearer and tele services
11. What is the term used by ITU for a set of global standards of 3G systems? 1 1 3 2
 (A) IMT 2000 (B) GSM
 (C) CDMA (D) Edge
12. Which of the following is not a standard of 3G? 1 1 3 1
 (A) UMTS (B) CDMA 2000
 (C) TD-SCDMA (D) LTE
13. Which of the following WAP protocol stack compatible for handling connections, reconnections and suspensions? 1 2 4 1
 (A) WAE (B) WSP
 (C) WTP (D) WLTS
14. In the congestion avoidance algorithm, the size of the congestion window increases _____ until congestion is detected 1 1 4 1
 (A) Exponentially (B) Additively
 (C) Multiplicatively (D) Suddenly
15. How would a DHCP client accept one of the configurations from servers? 1 1 4 1
 (A) DHCPOFFER (B) DHCPREQUEST
 (C) DHCPRELEASE (D) DHCPDISCOVER
16. In which of the layer of OSI, WSP protocol stack for WAP works? 1 2 4 1
 (A) Application layer (B) Session layer
 (C) Transaction layer (D) Transport layer
17. In IEEE 802.11, _____ is made up of mobile wireless stations and an optional base station, known as access point (AP) 1 1 5 1
 (A) ESS (B) BSS
 (C) CSS (D) HLR
18. In a piconet, one master device _____. 1 2 5 1
 (A) Cannot be slave (B) Can be slave in another piconet
 (C) Can be slave in the same piconet (D) Can be master in another piconet
19. What is the use of the RFID module? 1 2 5 2
 (A) Object identification (B) To provide 3G connectivity
 (C) To measure temperature (D) To measure Wi-Fi strength
20. MAC layer in Wi-max provides interface between _____. 1 1 5 1
 (A) Higher transport layers and (B) Application layer and network physical layer layer
 (C) Data link layer and network (D) Session layer and application layer layer

PART – B (5 × 4 = 20 Marks)

Answer ANY FIVE Questions

	Marks	BL	CO	PO
21. What is the use of k-bit pattern in frequency hopping spread spectrum? What is the significance of 'k' in bit pattern?	4	3	1	1
22. How does slotted ALOHA gives improved throughput compared with classical ALOHA?	4	3	2	1
23. What are the sub-system in GSM? Brief each sub-system.	4	3	3	1
24. What is the primary and secondary synchronization in UMTS?	4	3	3	1
25. Discuss the four types of orbits in satellite communication.	4	3	4	1
26. Differentiate DCF and PCF in IEEE 802.11	4	3	3	1
27. Compare HiperLAN1 and HiperLAN2.	4	3	5	1

PART – C (5 × 12 = 60 Marks)

Answer ALL Questions

	Marks	BL	CO	PO
28. a. Explain frequency hopping spread spectrum using transmitter and receiver block diagrams. What is the role of k-bit pattern in it?	12	3	1	1
(OR)				
b. What is the need of multiplexing? What are the types of multiplexing? Discuss how multiple access techniques implement multiplexing.	12	3	1	1
29. a. Draw and explain the cellular system with three cell clusters and three sectors per cell. Explain how channel interference is addressed in this architecture.	12	4	2	1
(OR)				
b. Illustrate with an example how orthogonality ensures proper data transmission in CDMA communication. How the data are successfully retrieved at receiver end.	12	4	2	1
30. a. Discuss how the automatic, worldwide localization of users is provided in GSM.	12	4	3	1
(OR)				
b. Summarize the main features of third generation mobile phone system. How do they achieve higher capacities and higher data rates? How does UMTS achieves different data rates?	12	4	3	1
31. a. Describe in detail WTLS class 0, class 1, class 2 initiator and responder used in WTLS.	12	3	4	1
(OR)				
b. Illustrate the IP address assignment process in DHCP using client initialization flow diagram.	12	3	4	1

32. a. What are the various medium access method used in IEEE 802.11? Explain any one method in details along with necessary diagram. 12 3 5 1

(OR)

b. Illustrate how femtocell networks achieves better coverage in a closed room environment. Explain its communication mechanisms. 12 3 5 1

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