*Total number of printed pages:* **Programme(UG)/Semester VII/UECE712A**

**2024**

**Wireless and Mobile Communication**

*Full Marks: 100*

Time: Three hours

***The figures in the margin indicate full marks for the questions.***

*Answer **any five** questions.*

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| 1. | a) | What do you mean by multiple access? What are the different multiple access techniques? Explain any two of them. | 10 |
| | b) | Explain handoff phenomenon in mobile cellular system. What are the different types of handoff? What do you mean by Soft and Hard handoff? | 3+2+5= 10 |
| 2. | a) | What do you mean by TDD and FDD? Describe the frame structure of TDMA. How does the frame generation happen in TDMA? | 8 |
| | b) | Describe the GSM system architecture and the various interfaces used in GSM. What are the variousGSM control channels. | 8 |
| | c) | Explain the working of OFDM as a multicarrier system. | 4 |
| 3. | a) | Write down the salient features of Bluetooth technology. What are the various Bluetooth connection modes? Explain. | 3+6=9 |
| | b) | Explain Nyquist criterion for zero ISI and raised cosine spectrum. | 6 |
| | c) | Find out the expressions for efficiency and no. of channels for TDMA system. | 5 |
| 4. | a) | What do you mean by inter symbol interference in wireless communication? What are its causes? | 4 |

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| | b) | Explain the cell splitting approach used in mobile communication. | 4 |
| | c) | Describe the bluetooth protocol stack. | 6 |
| | d) | State the channel characteristics of CDPD, ARDIS and RMD. | 6 |
| 5. | a) | Explain the important stages of OFDM system with proper diagram. | 9 |
| | b) | Explain how does a microcell zone approach help in reducing the no. of handoffs required when sectoring is employed? | 6 |
| | c) | For a 7-cell reuse system and $120^0$ sectoring, the no, of interferers in the first tier is reduced from 6 to 2. Find the improved SIR. Take path loss exponent as 4. | 5 |
| 6. | a) | Outline in brief generation-wise the important features of cellular and mobile radio network systems. | 10 |
| | b) | Elaborate the functions of L2CAP layer of Bluetooth. | 5 |
| | c) | What are the advantages of TDMA over FDMA. | 5 |
| 7. | | Write short notes on -i) WiMAX, ii) CDMA, iii) Channel coding stages of OFDM, iv) Difference between GSM and GPRS. | 5*4=20 |

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