**Question Paper Code** | **12662**

## B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
### Sixth Semester
### Electronics and Communication Engineering
### 20ECPC603 - WIRELESS COMMUNICATION
#### Regulations - 2020

Duration: 3 Hours                                                   Max. Marks: 100

### PART - A (10 × 2 = 20 Marks)
#### Answer ALL Questions

| | | Marks | K-Level | CO |
|---|---|---|---|---|
| 1. | Define coherence time. | 2 | K1 | CO1 |
| 2. | If the frequency of the signal is 900 MHz and the mobile velocity is 75Km/hr. Calculate the received signal frequency when the mobile moves away from the transmitter. | 2 | K2 | CO1 |
| 3. | What is a handoff? List its types. | 2 | K1 | CO3 |
| 4. | Define dwell time. | 2 | K1 | CO3 |
| 5. | List the linear modulation techniques. | 2 | K1 | CO4 |
| 6. | What are the advantages of $\pi/4$ QPSK? | 2 | K1 | CO4 |
| 7. | Define selection diversity. | 2 | K1 | CO5 |
| 8. | What is equalization? | 2 | K1 | CO5 |
| 9. | List the applications of MIMO. | 2 | K1 | CO6 |
| 10. | What is ergodic capacity and outage capacity of a flat fading channel? | 2 | K1 | CO6 |

### PART - B (5 × 13 = 65 Marks)
#### Answer ALL Questions

| | | | | | |
|---|---|---|---|---|---|
| 11. | a) | Explain in detail the free space propagation model with relevant mathematical expressions. | 13 | K2 | CO1 |
| | | **OR** | | | |
| | b) | Discuss the fading effects due to multipath time delay spread and the Doppler spread. | 13 | K2 | CO1 |
| 12. | a) | Explain the different channel assignment strategies and its variants used in cellular communication. | 13 | K2 | CO3 |
| | | **OR** | | | |
| | b) i) | Explain frequency reuse in detail and elaborate on frequency reuse factor. | 7 | K2 | CO3 |
| | ii) | Explain about co-channel interference and adjacent channel interference. | 6 | K2 | CO3 |

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*          ***12662***

| 13. | a) | Explain GMSK transmitter and receiver? Draw its PSD. | 13 | K2 | CO4 |

**OR**

| | b) i) | Elaborate the performance of digital modulation in slow flat fading channels. | 7 | K2 | CO4 |
| | ii) | Explain the error probability in flat fading channels with neat diagrams. | 6 | K2 | CO4 |

| 14. | a) | Explain micro diversity, macro diversity, transmit diversity and receiver diversity with neat sketches. List the advantages and disadvantages of each technique. | 13 | K2 | CO5 |

**OR**

| | b) | Explain zero forcing and LMS algorithms in detail. | 13 | K2 | CO5 |

| 15. | a) | Illustrate the concept behind system model and channel state information of MIMO systems in detail. | 13 | K2 | CO6 |

**OR**

| | b) | Explain MIMO Beam forming in MIMO Architecture with a neat diagram. | 13 | K2 | CO6 |

## PART - C (1 × 15 = 15 Marks)

| 16. | a) | Explain briefly the principle of OFDM. | 15 | K2 | CO2 |

**OR**

| | b) | Explain the features of FDMA in detail. How many channels can a FDMA system handle and how the system combat non-linear effect does? | 15 | K2 | CO2 |

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*