



**B.E/B.TECH DEGREE EXAMINATIONS: APRIL /MAY 2024**

(Regulation 2018)

Sixth Semester

**ELECTRONICS AND COMMUNICATION ENGINEERING**

U18ECE0024: Wireless System and Standards

**COURSE OUTCOMES**

**CO1:** Describe the fundamentals of Wireless Communication.

**CO2:** Analyze Multiple Access Mechanism.

**CO3:** Demonstrate various 3G Technologies.

**CO4:** Explore Various Wireless Standards.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|--|-----|-------------------|
| 1. Recall and write about the unique characteristics of ultra-wideband techniques.                           | CO1 | [K <sub>2</sub> ] |
| 2. Outline about radio communication channel.  | CO1 | [K <sub>1</sub> ] |
| 3. Compare Circuit switching network with Packet switching network.  | CO2 | [K <sub>2</sub> ] |
| 4. Outline the basic concept of Time Division Multiple Access.   | CO2 | [K <sub>2</sub> ] |
| 5. Show the operational advantages of CDMA 2000.   | CO3 | [K <sub>2</sub> ] |
| 6. What is handoff in wireless system?   | CO3 | [K <sub>2</sub> ] |
| 7. Summarize about HIPERLAN.   | CO4 | [K <sub>2</sub> ] |
| 8. Identify an example of a scenario where the IEEE 802.15.4 standard is applicable.                         | CO4 | [K <sub>3</sub> ] |
| 9. Compare wired local area network with wireless local area network.  | CO4 | [K <sub>2</sub> ] |
| 10. Outline the key features that differentiate Third Generation cellular systems from previous generations. | CO4 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

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|--|---|-----|-------------------|
| 11. a) Describe the frequency-domain characteristics of radio channels and their implications for communication.                     | 8 | CO1 | [K <sub>2</sub> ] |
| b) Compare and contrast the advantages and disadvantages of different spread spectrum techniques in various communication scenarios. | 8 | CO1 | [K <sub>2</sub> ] |
| 12. a) Summarize the key principles of the "OSI Reference Model" in networking.  | 8 | CO2 | [K <sub>2</sub> ] |

	b)	Describe the advantages and disadvantages of "Pilot-Aided CDMA Signal Detection" in a wireless communication system.	8	CO2	[K <sub>2</sub> ]
13.	a)	Summarize about UMTS protocol stack.	8	CO3	[K <sub>2</sub> ]
	b)	Interpret about TD-SCDMA, and how does it differ from other cellular technologies?	8	CO3	[K <sub>2</sub> ]
14.	a)	Analyze the features and applications of IEEE 802.11 Frequency Hopping Spread Spectrum and Direct-Sequence Spread Spectrum, considering their suitability for different communication environments.	8	CO4	[K <sub>3</sub> ]
	b)	Explain in detail the architecture and functionality of the MAC sublayer within the IEEE 802.11 standards, emphasizing its role in managing communication between the physical layer and higher layers.	8	CO4	[K <sub>2</sub> ]
15.	a)	Explain how 3G systems improved upon the data rates and multimedia capabilities of earlier generations	8	CO4	[K <sub>2</sub> ]
	b)	Discuss the transition from first-generation analog systems to second-generation digital systems in cellular phone standards.	8	CO4	[K <sub>2</sub> ]
16.	a)	Discuss the factors that led to the creation of ETSI HIPERLAN and ETSI HIPERLAN/2 standards and their evolution over time.	8	CO4	[K <sub>2</sub> ]
	b)	Write short notes on UMTS cell and network structure.	8	CO4	[K <sub>2</sub> ]

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