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Question Paper Code: AEC524



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER -II

Four B.Tech VI Semester End Examinations, April - 2019

Regulations: IARE-R16

WIRELESS COMMUNICATION AND NETWORKS (Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

- | | | | |
|---|----|---|------|
| 1 | a) | Write some examples for wireless communication system and also briefly explain mobile radio evolution | [7M] |
| | b) | Briefly compare the common wireless communication systems. | [7M] |
| 2 | a) | Explain about 2G and 3G cellular networks. | [7M] |
| | b) | Explain about WLL and WLAN. | [7M] |

UNIT – II

- | | | | |
|---|----|---|------|
| 3 | a) | Write a short note on Fresnel zone geometry and Knife edge diffraction model? | [7M] |
| | b) | Explain the terms signal penetration into buildings and Ray tracing and site specific modeling? | [7M] |
| 4 | a) | Explain about reflection from perfect conductors and Ground reflection model | [7M] |
| | b) | Explain any two outdoor propagation models. | [7M] |

UNIT – III

- | | | | |
|---|----|--|------|
| 5 | a) | What are factors influencing small scale fading? | [7M] |
| | b) | Explain briefly about parameters of mobile multipath channels? | [7M] |
| 6 | a) | Explain different types of small scale fading? | [7M] |
| | b) | Explain briefly about Two -ray Rayleigh fading model? | [7M] |

UNIT – IV

- | | | | |
|---|----|---|------|
| 7 | a) | Explain different types of WLAN Topologies? | [7M] |
| | b) | Compare standards of IEEE 802.11 a, b, g and n standards? | [7M] |

- 8 a) Explain briefly IEEE 802.11 medium access control? [7M]
b) Explain briefly about WLAN & WLL? [7M]

UNIT – V

- 9 a) Explain the functional requirements of HYPERLAN.. [7M]
b) Explain the functioning of WATM with basic architecture. [7M]
- 10 a) Explain about data oriented CDPD network. [7M]
b) Write short note on GSM and GPRS [7M]



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COURSE OBJECTIVES

The course should enable the students to:

S.No	Description
I	Provide fundamental treatment about many practical and theoretical concepts that forms basic of wireless communications.
II	Equip various kinds of wireless networks and its operations.
III	Understand the concept of frequency reuse, and be able to apply it in the design of mobile cellular system.
IV	Understand various modulation schemes and multiple access techniques that are used in wireless communications,

COURSE OUTCOMES (COs):

S.No	Description
CO1	Demonstrate their understanding on functioning of wireless communication system and evolution of different wireless communication systems and standards..
CO2	Compare different technologies used for wireless communication systems operations.
CO3	Explain the architecture, functioning, protocols capabilities and application of various wireless communication networks
CO4	Demonstrate an ability explain multiple access techniques for Wireless Communication
CO5	Demonstrate an ability to evaluate design challenges, constraints and security issues associated with Ad-hoc wireless networks.

COURSE LEARNING OUTCOMES

Students who complete the course will have demonstrated the ability to do the following

CLO Code	CLO's	At the end of the course, the student will have the ability to:
AEC524.01	CLO 1	Understand the principles and fundamentals of wireless communications.
AEC524.02	CLO 2	Demonstrate cellular system design concepts in wireless mobile communication networks.
AEC524.03	CLO 3	Understand the fundamental Radio Wave Propagation Mechanisms.
AEC524.04	CLO 4	Analyze perspective on Fundamentals of Equalization and Mobile Radio Propagation Multipath Measurements.
AEC524.05	CLO 5	Analyze various multiple access schemes and techniques used in wireless communication.
AEC524.06	CLO 6	Discuss the Parameters of Mobile Multipath Channels and Types of Small-Scale Fading-Fading effects.
AEC524.07	CLO 7	Examine the perspective on Fundamentals of Equalization, Linear Equalizers, Non-linear Equalization.
AEC524.08	CLO 8	Study and understand the Diversity Techniques and RAKE Receiver in Radio Propagation.
AEC524.09	CLO 9	Demonstrate wireless local area networks and their specifications in communication system.
AEC524.10	CLO 10	Understand the analytical perspective on the design and analysis of the traditional and emerging wireless networks
AEC524.11	CLO 11	Discuss the nature of and solution methods to the fundamental problems in wireless networking.
AEC524.12	CLO 12	Understand the architecture of the various wireless wide area networks such as GSM, IS-95, GPRS and SMS.
AEC524.13	CLO 13	Understand the operation of the various wireless wide area networks such as GSM, IS-95, GPRS and SMS.
AEC524.14	CLO 14	Understand the existing and emerging wireless standards in wireless wide area networks

CLO Code	CLO's	At the end of the course, the student will have the ability to:
AEC524.15	CLO 15	Examine the emerging techniques OFDM and its importance in the wireless communications.

MAPPING OF SEMESTER END EXAMINATION TO COURSE LEARNING OUTCOMES

SEE Question No.		Course learning Outcomes	Course Outcomes	Blooms Taxonomy Level
1	a	AEC524.01 Understand the principles and fundamentals of wireless communications.	CO1	Understand
	b	AEC524.01 Understand the principles and fundamentals of wireless communications.	CO1	Understand
2	a	AEC524.03 Remember fundamentals of Radio Wave Propagation Basic Propagation Mechanisms.	CO1	Remember
	b	AEC524.02 Demonstrate cellular system design concepts in wireless mobile communication networks.	CO1	Understand
3	a	AEC524.04 Analyze perspective on Fundamentals of Equalization and Mobile Radio Propagation Multipath Measurements.	CO2	Understand
	b	AEC524.04 Analyze perspective on Fundamentals of Equalization and Mobile Radio Propagation Multipath Measurements.	CO2	Understand
4	a	AEC524.05 Analyze various multiple access schemes and techniques used in wireless communication.	CO2	Remember
	b	AEC524.05 Analyze various multiple access schemes and techniques used in wireless communication.	CO2	Understand
5	a	AEC524.06 Discuss the Parameters of Mobile Multipath Channels and Types of Small-Scale Fading-Fading effects.	CO3	Remember
	b	AEC524.07 Examine the perspective on Fundamentals of Equalization, Linear Equalizers, Non-linear Equalization	CO3	Remember
6	a	AEC524.06 Discuss the Parameters of Mobile Multipath Channels and Types of Small-Scale Fading-Fading effects.	CO3	Understand
	b	AEC524.08 Remember the Diversity Techniques and RAKE Receiver in Radio Propagation.	CO3	Remember
7	a	AEC524.10 Remember the analytical perspective on the design and analysis of the traditional and emerging wireless networks	CO4	Remember
	b	AEC524.09 Demonstrate wireless local area networks and their specifications in communication system.	CO4	Understand
8	a	AEC524.09 Demonstrate wireless local area networks and their specifications in communication system.	CO4	Remember
	b	AEC524.10 Remember the analytical perspective on the design and analysis of the traditional and emerging wireless networks	CO4	Understand
9	a	AEC524.12 Understand the architecture of the various wireless wide area networks such as GSM, IS-95, GPRS and SMS.	CO5	Understand
	b	AEC524.11 Discuss the nature of and solution methods to the fundamental problems in wireless networking.	CO5	Remember
10	a	AEC524.13 Understand the operation of the various wireless wide area networks such as GSM, IS-95, GPRS and SMS.	CO5	Understand
	b	AEC524.11 Discuss the nature of and solution methods to the fundamental problems in wireless networking.	CO5	Understand

Signature of Course Coordinator

HOD, ECE