Printed Page:- 04 **Subject Code**:- **AEC0602**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2022-2023 **)**

Subject: Wireless Communication Networks

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **20**

1. Attempt all parts:-

1-a. Which of the following is present in both an HTTP request line and a status line? (CO1) 1

(a) HTTP version number

(b) URL

(c) Method

(d) None of the mentioned

1-b. The File Transfer Protocol is built on _____ (CO1) 1

(a) data centric architecture

(b) service oriented architecture

(c) client server architecture

(d) connection oriented architecture

1-c. The TTL field has value 10. How many routers (max) can process this datagram? (CO2) 1

(a) 11

(b) 5

(c) 10

(d) 1

1-d. Class C IP address default mask address.(CO2) 1

(a) 255.0.0.0

(b) 255.255.255.0

(c) 255.255.0.0

(d) None

1-e. Which type of fading occurs due to the movement of the transmitter or receiver? (CO3) 1

(a) Rayleigh fading

(b) Rician fading

(c) Doppler fading

(d) Slow fading

1-f. Which multiple access scheme is used in LTE Advanced? (CO3) 1

(a) FDMA

(b) TDMA

(c) OFDMA

(d) CDMA

1-g. Which of the following is NOT an example of multi carrier modulation? (CO4) 1

(a) Orthogonal Frequency Division Multiplexing (OFDM)

(b) Code Division Multiple Access (CDMA)

(c) Multitone Modulation (MTM)

(d) Discrete MultiTone (DMT)

1-h. What is dynamic spectrum access in cognitive radio? (CO4) 1

(a) The ability to change modulation schemes during transmission

(b) The ability to change the transmit power

(c) The ability to access unused spectrum in real time

(d) The ability to transmit and receive data simultaneously

1-i. _____ is defined as the ratio of desired signal power to undesired noise power. (CO5) 1

(a) Signal to noise ratio

(b) Noise to signal ratio

(c) Noise figure

(d) Noise temperature

1-j. Smart antenna integrates the contributions of _____ antenna elements. (CO5) 1

(a) band distributed

(b) band centralized

(c) spatially distributed

(d) spatially centralized

2. Attempt all parts:-

2.a. What is the purpose of the Session layer, and how does it differ from the Transport layer? (CO1) 2

2.b. What is a network address and how is it used at the network layer? (CO2) 2

2.c. What are the most commonly used wireless standards? (CO3) 2

2.d. What are the advantages of using small cells? (CO4) 2

2.e. Explain the concept of Multiple Access Technology.(CO5) 2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-a. What is framing, and how does it work in the data link layer? (CO1) 6

3-b. Explain the basic OSI model for the wireless networking? Define the function of each layer.(CO1) 6

3-c. How does the network layer contribute to network scalability? (CO2) 6

3-d. What is flow control, and how does it work in the transport layer? (CO2) 6

3.e. How did 4G networks improve upon 3G networks? (CO3) 6

3.f. Describe some of the applications of SDR? (CO4) 6

3.g. Explain the following Multiple Access Techniques used to access the channel by mobile subscriber. (CO5) 6

1-Frequency Division Multiple access.

2-Code Division Multiple access.

SECTION C **50**

4. Answer any <u>one</u> of the following:-

4-a. What are the half duplex and full duplex transmissions used in the data link layer? Explain the mechanism with suitable diagrams.(CO1) 10

4-b. How does the OSI model facilitate communication between different systems? (CO1) 10

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5. Answer any <u>one</u> of the following:-

5-a.	What is the transport layer in OSI Model and what is its purpose to use in wireless system modelling? (CO2)	10
5-b.	What is the role of the application layer in the client-server model? (CO2)	10

6. Answer any <u>one</u> of the following:-

6-a.	What is the vision for the next generation of wireless communication? (CO3)	10
6-b.	What is the cellular system evolution? Why is it so important in present era of telecommunication? (CO3)	10

7. Answer any <u>one</u> of the following:-

7-a.	How is SDR used in wireless communication systems? (CO4)	10
7-b.	How does CR differ from traditional radio systems? (CO4)	10

8. Answer any <u>one</u> of the following:-

8-a.	What is multiplexing in wireless communication? Discuss the various terms and methodologies to define it.How these all are different from each other? (CO5)	10
8-b.	What are the different security challenges and solutions in ad hoc networks? How do these challenges and solutions differ from those in wired or wireless networks? (CO5)	10