M. Tech. In Distributed & Mobile Computing 1ˢᵗ Sem. Exam.- 2024

(1ˢᵗ year 1ˢᵗ Semester)

SUBJECT: **Wireless Networks and Mobile Systems**   Full Marks: 100

Answer any *five* questions.

1. a) What do you mean by channel borrowing?
   b) Give a comparative study between fixed and dynamic channel allocation.
   c) Differentiate between MCHO, NCHO and MAHO.
   d) What is near-end and far-end problem?
   e) What are the advantages of Micro-cell zone concept over sectoring?
   f) How is frequency reuse concept useful in cellular communication?   3+3+6+3+3+2=20

2. a) What are the main classifications of user equipments in GPRS network?
   b) What are the roles of SGSN and GGSN in the GPRS network?
   c) Compare and contrast between GPRS and EDGE systems.
   d) Discuss about the forward and reverse links in IS-95 system.
   e) What are the different stages of pilot signal maintenance in IS-95?   3+4+4+5+4=20

3. a) Describe the GSM TDMA/FDMA access technology.
   b) If a GSM multiframe consists of 26 groups of 8 TDM frames, what will be the time duration of each multiframe?
   c) State the importance of the following numbers in GSM networks : EIR, MSISDN
   d) How a call is routed to a GSM mobile?
   e) How the authentication and security are maintained in GSM networks?   6+2+4+4+4=20

4. a) Describe the Mobile IP operation with diagram.
   b) How the problem of triangular routing is handled in MIPv4?
   c) What are the limitations of MIPv4?
   d) What is reverse tunneling?
   e) What are the different types of IP encapsulation techniques in Mobile IP?   5+3+3+3+6=20

5. a) Describe the basic WLAN architecture and its components.
   b) Describe the three different techniques used for infrared transmission in WLAN.
   c) Why is CSMA/CD not suitable for wireless networks?
   d) Describe the operation of DCF.
   e) Contention window influences performance for back-off algorithm. - Explain.
   f) How can we eliminate hidden terminal problem?
                                                                  4+6+2+4+2+2=20

6. a) How the use of RTS and CTS help in avoiding collisions?
   b) Describe the different inter-frame spacings defined in IEEE 802.11 and also define the significance of those frames.
   c) With a schematic diagram describe the timing of successful transmission for PCF operation.
   d) What are the different security measures that can be taken in WLAN?   3+6+6+5=20

7. Write short notes on: 5X4=20
a) All-IP networks   b) Co-channel distance
c) Cell Splitting   d) Roaming Agreement