

B3.5-R3: NETWORKING AND MOBILE COMMUNICATIONS

NOTE:

1. Answer question 1 and any FOUR questions from 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.

- a) How does LLC sublayer ensure to transport efficiently multimedia traffic over the radio interface?
- b) Differentiate between Direct Sequence and Frequency Hopping spread spectrum techniques.
- c) What are the data and messaging services supported by Personal Access Communication System (PACS)? Explain briefly.
- d) What is a Bluetooth technology? Discuss the different layers that Bluetooth uses.
- e) List four significant factors which influence the choice of speech-coders in mobile communication. Which factor influences more as per your opinion? Give reasons.
- f) Discuss the advantages and disadvantages of Ad-Hoc Networks.
- g) Explain the architecture and features of "Short Message Service".

(7x4)

2.

- a) A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces 1000 frames?
- b) Discuss the advantages of WLAN. What are its disadvantages? What are design goals for WLANS?
- c) If GSM uses a frame structure where each frame consists of eight time frame slots, and each time slot contains 156.25 bits, and data is transmitted at 270.833 kbps in the channel. Find
 - i) The time duration of a bit
 - ii) The time duration of a slot
 - iii) The time duration of a frame.

(6+6+6)

3.

- a) What is channelization? Explain at least two channelization protocols in detail?
- b) Explain the typical call flow sequences in GSM.

(9+9)

4.

- a) What are the advantages and disadvantages of layered model?
- b) Explain small scale multipath propagation. Discuss the factors that influence small scale fading.
- c) Briefly discuss the operation of a CDMA multiple access system. In what ways it is superior to TDMA? Mention the potential application of CDMA.

(4+5+9)

5.

- a) Differentiate between slotted ALOHA and Pure ALOHA? Discuss the limitation of pure ALOHA.
- b) What are the application areas of DECT? Discuss the conceptual model of DECT in brief.
- c) What are the limitations in wireless networking? Discuss the security issues in wireless networks.

(6+6+6)

6.

- a) Discuss the advantages and disadvantages of VSAT networks. Explain the operation of VSAT.
- b) Differentiate between:
 - i) Wireless Datagram Protocol and Wireless Transaction Protocol
 - ii) Wireless Session Protocol and Wireless Application Environment

(10+8)

7.

- a) Explain, how MACAW protocol is operated in WLANS?
- b) Discuss the features of the following:
 - i) Circuit Switched Data Services
 - ii) Packet Switched Data Services.

(9+9)