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) What is a bridge? Discuss the purpose and advantages of a bridge.
b) What are the benefits of spread spectrum? What is frequency-hopping spread spectrum?
c) Explain the terms Attenuation, Delay, distortion and noise.
d) What are the various multiple access technologies for Cellular Systems? Explain any one of them.
e) If a computer is connected to a wireless LAN then it can communicate with the Computers in wired LAN. Is the statement true? Justify by giving reasons.
f) Explain the concept of interfaces and services. What is the relation between Layers at an interface?
g) Explain the Circuit-Switched Data Services on Analog Cellular Networks.

                                                               (7x4)

2.
a) What are the key features of IMT-2000? What are the general requirements for Radio Access to IMT-2000?
b) What are the main elements of GSM System architecture? Discuss the reasons of separate MS and SIM in GSM.
c) A network is to be planned using cellular topology. If total available bandwidth is 25MHz and each user requires 30KHz bandwidth for voice communication. 20 lower power antennas are used and the frequency band is divided in to four sets and one set is assigned to each cell. Find the number of simultaneous users.

                                                            (6+6+6)

3.
a) Discuss the advantages and disadvantages of packet switching over circuit switching?
b) Discuss the deployment issues with Wireless Local Loop (WLL). Explain Satellite based technology for WLL Systems.

                                                             (6+12)

4.
a) Using QPSK modulation and convolutional coding, the IS-95 digital cellular systems require $3dB < S_r < 9$ dB. The bandwidth of the channel is 1.25 MHz., and the transmission rate is R = 9600 bps. Find the capacity of   a single cell IS-95 cell.
b) i) What is the maximum throughput of a pure ALOHA network with large number of users and transmission rate of 1Mbps?
   ii) What is the throughput of a TDMA network with transmission rate of 1Mbps?
   iii) What is the throughput of the ALOHA network if only one user was effective with
   transmission rate of 1Mbps?
   c) What are the security requirements of wireless networks?

5.
a) What is mobile IP? Draw & describe the mobile IP architecture and its functional components.
b) What is VSAT? What are the services supported by VSAT networks?

(12+6)

6.
a) What is GPRS? Describe the GPRS architecture and protocols.
b) Explain each of the following in detail with reference to WAP:
    i)   Wireless Datagram Protocol
    ii)   Wireless Transaction Protocol
    iii)   Wireless Session Protocol

(12+6)

7.   Write short notes on the following:
a) Blue tooth Protocol stack
b) Comparison between OSI reference model and TCP/IP suite
c) Traditional and mobile transport layer

(6x3)