B3.5-R3: NETWORKING AND MOBILE COMMUNICATIONS

NOTE:

> 1. **Answer question 1 and any FOUR from questions 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) In the OSI model, how are PDUs, SDUs and IDUs related?
b) What are the reasons of fading in cellular mobile communication?
c) Show the block schematic diagram of a direct sequence CDMA receiver.
d) Why is CSMA/CD not useful in WLANs?
e) Show the schematic diagram of a V-SAT network.
f) How is GPRS different from GSM?
g) Show the main modules in the WLL reference model.

(7x4)

2.
a) Explain and illustrate TDMA technique. What are the limitations of TDMA systems?
b) In a slotted ALOHA find the load to obtain the maximum throughput.
c) Compare circuit and packet switching.

(9+4+5)

3.
a) Show the frequency allocation plan and explain frame and multi-frame in GSM systems.
b) A transmitter radiates at sinusoidal carrier frequency of 2000MHz. A mobile receiver is moving directly towards the transmitter at 100 km per hour. Compute the received carrier frequency.

(9+9)

4.
a) Differentiate between slow and fast frequency hopping. How is a frequency hopping system implemented and provides anti-jamming capability?
b) Discuss Bluetooth Protocol and show its architecture.

(9+9)

5.
a) Why is power control necessary in CDMA systems but not in GSM systems? Justify your answer using multiplexing schemes.
b) How are handoffs in cellular mobile communication affected by handoff threshold and minimum acceptable signal level? Illustrate Hard Handoff and Soft Handoff in cellular mobile communication systems.

(9+9)

6.
a) Using appropriate diagrams, illustrate all the events in IEEE 802.11 protocol for mobile adhoc WLANs. What is the use of RTS-CTS exchange in the above protocol?
b) What is the need for mobile IP and how is it implemented?

(9+9)

7.
a) Discuss the components and architecture in Wireless Access Protocol (WAP). How does an application use WAP which requires reliability but no security?
b) How do signaling and application processes interact with layers in DECT protocol? What type of multiple access is used in DECT and how?

(9+9)