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) Differentiate between Narrow Band System and Broad Band System.

b) What is Handoff and roaming? How is handoff performed during roaming?

c) "The MAC protocol for the wired network cannot be used for wireless." Is the statement true or false? Justify your answer.

d) Explain briefly SMS with security aspects for secure SMS?

e) Explain Ad-Hoc Network Topology. Compare the Ad-Hoc Topology with Infrastructure Topology.

f) Discuss the goals of cryptography. What is Cryptosystem and Encryption?

g) Draw and discuss the conceptual model of operation of MTSO. Give its role in providing Mobile services.

(7x4)

2.

a) Explain frequency reuse in Cellular Communications. What are the advantages of this approach? List different frequency reuses schemes and explains any one of them.

b) If a US AMPS Cellular operator is allocated 12 MHz for each simplex band and if B_t is 12 MHz, B_{guard} is 10 KHz and B_c is 30 KHz, find the number of channels available in FDM system.

(9+9)

3.

a) Differentiate between Circuit Switched Data Services and Packet Switched Data Services on Cellular Networks.

b) Explain pure ALOHA and slotted ALOHA with their usage in mobile communication system.

c) Explain the following terms:

i) Processing Gain

ii) Pseudo random code generator

iii) Walsche code

(6+6+6)

4.

a) How do the third generation cellular systems differ from second generation cellular systems?

b) If 30 MHz of total spectrum is allocated for a duplex wireless cellular system in which simplex channel has 35 KHz RF bandwidth. Find the number of duplex channels and number of channels per cell site, if N=12 cell reuse is used.

c) Discuss the basic architecture of GPRS and explain, how it is used to enhance data rates in a GSM system.

(6+6+6)

5.

a) What are the different ways in which secret keys can be distributed to two different communicating parties?

b) What are the reasons for WAP defining its own security layers? Discuss the important function of WSP and WAE.

c) Name the layers specified by IEEE 802.11 standard. Discuss the role of these layers.

(6+6+6)

6.

a) What is a Protocol Data Unit? List and explain its fours fields.

b) What is the function of a WAP gateway? Discuss WAP protocols.

c) Write short notes on Direct Sequence Spread Technology & Frequency Hopping Spread Spectrum Technology.

(3+6+9)

7.

a) Which technology is generally used in most of VSATs installed globally? What are reasons of using it? How can the frequency carrier be assigned between any two VSATs on a demand basis?

b) What are the general requirements for Radio Access to IMT-2000? Discuss the evaluation and specification process for IMT-2000 radio access technologies.

(9+9)