B3.5-R3: NETWORKING AND MOBILE COMMUNICATION

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) In context of Wireless Local Area Network give difference between ad-hoc Wireless LAN and Infrastructure Wireless LAN.

b) What are the benefits of using Wireless Local Loop (WLL) Technologies in broadband wireless access radio in the loop?

c) What are Wireless Application Protocol (WAP) gateway and its main functions?

d) What are the types of care-of-address in mobile IP?

e) Time Division Multiple Access is a technique for transmitting / receiving data between two devices. How is data transferred in TDMA?

f) What are the classes of IP addressing scheme and how many numbers of host-IDs and Network-IDs are there in each class?

g) What are the basic problems which need to be addressed in VSAT networks?

(7x4)

2.

a) General Packet Radio System is radio access technology and provides packet data service. Explain its protocol architecture.

b) Explain GSM architecture and frequency planning.

c) Describe Digital Enhanced Cordless Telecommunication system and the protocol architecture.

(5+5+8)

3.

a) Describe Functional Network Architecture for IMT-2000. What are the general requirements for IMT 2000?

b) What are the key features of IS-95 CDMA System? Comment on the capacity of CDMA systems.

(9+9)

4.

a) Mobile IP provides the ability of a host to stay connected to the internet regardless of their location and without needing to change the mobile host's long-term IP address. Explain Mobile IP operation with suitable diagrams.

b) A pure ALOHA system uses packets of size 1000 bits and channel transmission rate of 10 Mbps. The packet generation is a Poisson process with average rate of 10^3 packets/sec. Obtained the normalization throughput.

(9+9)

5.

a) Open System Interconnection is widely used for communication standard. What are Interface Data Unit, Service Data Unit and Protocol Data Unit with reference to OSI model?

b) Wireless Markup Language (WML) is optimized for limited capability devices and networks. Describe WML constrains, features and document model?

c) How is spread spectrum implemented by using frequency hopping?

(6+6+6)

6.

a) Explain the operation of MACAW protocol in WLANs.

b) Bluetooth is aimed for ad-hoc network with a very limited coverage and without need for an infrastructure. Explain its Physical and Medium Access Control Layers.

(9+9)

7.

a) Cellular Digital Packet Data (CDPD) was designed to maximize the use of existing functions and capabilities in Analog Mobile Phone System. Explain CDPD network architecture.

b) Very Small Aperture Terminal (VSAT) in a satellite communication functions is an overhead wireless repeater station that provides a microwave communication link between two geographically remote sites. Specify the operation of VSAT networks. Give suitable examples.

(9+9)