# 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 are the advantages and disadvantages of cellular systems with small cells?

b) Name the three basic propagation mechanisms which impact propagation in a mobile communication system. When do they occur?

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

d) "VSAT operates at slow data rates". Justify the statement by giving reasons.

e) What is a WAP gateway? Discuss its important functions.

f) Determine the maximum throughput that can be achieved using ALOHA and slotted ALOHA.

g) What are the reasons for the use of infrared transmission for WLANs?

**(7x4)**

**2.**

a) Discuss the benefits of spread spectrum system? How the spread spectrum can be achieved?

b) Explain Circuit switching and Packet switching. What are the factors that influence the use of packet switching in personal communication services?

c) Discuss the basic differences and similarities between wireless WAN and WLAN.

**(6+8+4)**

**3.**

a) What do you mean by DECT? Explain its system architecture.

b) Discuss the problems and advantages of forwarding mechanisms in ad-hoc networks regarding security, power saving and network stability.

c) Compare and contrast Bluetooth with HIPERLAN.

**(6+6+6)**

**4.**

a) Draw the GPRS architecture showing the main components. Which is the component responsible for assignment of an IP address to the mobile? Why does there a need of mapping between the mobile's IMSI and its IP address?

b) What are the requirements for a mobile IP? What are the entities for mobile IP? Explain how data is transferred from a mobile node to a fixed node.

**(8+10)**

**5.**

a) Discuss the general system features of personal access communication system.

b) Explain the functional Network Architecture of IMT-2000.

**(9+9)**

**6.**

a) Explain the data transfer services that OSI defines for the discrete data components passed across the interface and between peer entities.

b) What are the major technologies for WLL system? Discuss the advantages and disadvantages of these technologies.

**(10+8)**

**7.**

a) What is a Broadcast Network? What is the significance of network layer in broadcast network?

b) Explain the OSI model in detail.

**(9+9)**