BE11-R4: WIRELESS & MOBILE COMMUNICATION

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) A channel access method or multiple access method allows several terminals connected to the same multi-point transmission medium to transmit over it and to share its capacity Write the differences between FDMA, TDMA and CDMA channel access methods.

b) GSM permits the integration of different voice and data services and the interworking with existing networks. What are the barrier services offered by GSM?

c) What are the features of Personal Access Communication System?

d) Give advantage and disadvantages of Radio Transmission and Infra-red Transmission.

e) What is a hidden node problem in wireless networking? How can it be solved?

f) Explain Digital Enhanced Cordless Telecommunication (DECT).

g) Home Location Register and Visitor Location Register are elements of GSM. Compare functionality of HLR and VLR.

(7x4)

2.

a) General Packet Radio Service (GPRS) is a packet oriented mobile data service on the 2G and 3G cellular communication. Draw and explain architecture of GPRS.

b) What are the advancement of CSMA over ALOHA protocol. List and define the types of CSMA protocol. What are the types of CSMA?

(9+9)

3.

a) List frame types specified by IEEE 802.11 standards. Draw and explain 802.11 frame format.

b) WiMAX is a family of wireless communication standards based on the IEEE 802.16 standards, which provide multiple physical layer (PHY) and Media Access Control (MAC) options. What are the PHY and MAC layer specification of 802.16? What are the QoS supported by 802.16 protocol standard.

c) Wireless Local Loop (WLL) used a wireless communications link as the "last mile Internet access to telecommunications customers." What are the advantages of WLL over traditional wire-line connectivity?

(6+6+6)

4.

a) What are the Advantages of asynchronous CDMA technology over other technology?

b) Hidden nodes in a wireless network refer to nodes that are identified as out of range of other nodes and created problem of collision. What are the techniques used for handling hidden nodes?

c) Base Station Subsystem, Network & switching Subsystem, Operation & Maintenance subsystem are components of GSM. Explain functionalities of each.

(4+5+9)

5.

a) Explain the frequency reuse and Hand off mechanism in cellular Technology.

b) Draw and Explain layers of Bluetooth protocol stack.

(9+9)

6.

a) 3G is based on a set of standards used for mobile devices and mobile telecommunications use services and networks that comply with the International Mobile Telecommunications-2000 (IMT-2000). What are the standards specified by IMT-2000 to implement services of 3G?

b) What is Handover with respect to GSM? What are the Types of Handover Supported by GSM?

c) List the features of PAN and explain functioning of Personal Handy Phone System.

(6+8+4)

7.

a) What are the features of J2ME?

b) GSM is used for mobile communication. Explain protocol stack of GSM network.

c) For wireless and mobile system, Radio Waves are used to send information. What are the propagation mechanisms of Radio Waves?

(6+8+4)