BE11-R4: WIRELESS AND 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) Hidden nodes in a wireless network refer to nodes that are out of range of other nodes and create problem of collision. What are the solutions of it?

b) Explain circuit switching technique with the help of a diagram.

c) What is GPRS? Explain the key features of GPRS.

d) What is Personal Area Network? How it can be formed?

e) What are the differences between Classical Aloha and Slotted Aloha?

f) Write the differences between WLL and Mobile wireless.

g) Differentiate: TDMA and CDMA.

(7x4)

2.

a) GSM offers various services to subscribers. What are the supplementary services offered by GSM?

b) What is piconet and scatternet in Bluetooth? How do devices communicate with each other in Bluetooth network?

c) WEP is the privacy protocol specified in IEEE 802.11 to provide wireless LAN users protection against casual eavesdropping. What are the weaknesses of WEP?

(6+6+6)

3.

a) Coherence bandwidth is a statistical measurement of the range of frequencies over which the channel can be considered "flat". Explain Coherence Bandwidth.

b) What are the advantages of Wireless LAN?

c) IEEE 802.16 is a WiMax standards specified by the IEEE. Draw and explain architecture of 802.16.

(5+5+8)

4.

a) Explain the Frequency Reuse and Hand Off mechanism in cellular Technology.

b) Explain MAC frame structure 801.11 Protocol family.

(9+9)

5.

a) Advanced Mobile Phone Service (AMPS) is first generation Mobile system. How does it allocate frequency bands to mobiles? What is the major weakness of AMPS? What is the frequency band allocated to AMPS?

b) GSM is used for Voice Communication. When any mobile gets started, GSM system starts Registration process. Write step by step procedure of Cellular Phone Registration. Also mention what kinds of messages are exchanged among MS, HLR, VLR, MSC, BTS, and BSC.

(9+9)

6.

a) What is Ad-Hoc Mode in Wireless Networking? Explain the limitation of Ad-Hoc network.

b) Write down functional working of Spread Spectrum? Give Comparison of Direct Sequence vs. Frequency Hopping spread spectrum.

c) Draw GSM Architecture. Explain the functionality of Mobile Station, Base Station Subsystem, and Network Subsystem.

(5+6+7)

7.

a) What is J2ME? What are the J2ME configuration parameters? What is a J2ME Profile?

b) Describe various methods for channel allocation in wireless communication.

c) Symbian OS is used in Mobile phones as Operating System. What are the characteristics of Symbian OS?

(6+6+6)