

## 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) What is a hidden node problem in wireless networking? How can it be solved?
  - b) What are the reasons to use a hierarchical cellular infrastructure that supports cells of different sizes? How are cells divided into different sizes?
  - c) What are the advantages of digital transmission over analog transmissions?
  - d) What are the key characteristics of Short Message Service?
  - e) What are the applications of wireless networking?
  - f) Differentiate between Radio Transmission and Infra-red Transmission.
  - g) How are mobile ad-hoc networks formed?

**(7x4)**
  
2.
  - a) What are the causes of handover? What are different types of handover? How is it managed in GSM network?
  - b) Explain, briefly the design issues of IEEE 802.16 protocol.
  - c) WEP is the privacy protocol specified in IEEE 802.11 to provide wireless LAN users protection against casual eavesdropping. Explain, briefly the weaknesses of WEP.

**(6+6+6)**
  
3.
  - a) Describe briefly, the groups of services supported by the GSM.
  - b) Frequency hopping spread spectrum (FHSS) is a spread spectrum technique which allows for the coexistence of multiple networks in the same area by separating different networks using different hopping sequences. Write frame format of FHSS and explain functionality of each field.
  - c) Windows CE is developed by Microsoft. Explain briefly, the development tools supported in windows CE.

**(5+6+7)**
  
4.
  - a) Draw the architecture of CDMA. Explain entities of CDMA.
  - b) Differentiate LAN, MAN, WAN and Internet

**(10+8)**
  
5.
  - a) List and explain layers of Bluetooth protocol stack.
  - b) How do GSM register location of any Mobile Station?

**(9+9)**
  
6.
  - a) Compare Second Generation (2G) and Third Generation (3G) standard of cellular network with respect to its technology and applications.
  - b) How is GPRS an enhancement on GSM?
  - c) Draw GSM architecture. Explain the functionality of Mobile Station, Base Station subsystem and Network Subsystem

**(5+5+8)**

7.

- a) Symbian OS is used in Mobile phones as Operating System. What are the characteristics of symbian OS?
- b) What are the advantages of Wireless LAN?
- c) Describe various methods for channel allocation in wireless communication.

**(6+6+6)**