B.E / B.Tech (Part Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

INFORMATION TECHNOLOGY

Semester VI

PTIT9352 – WIRELESS NETWORKS

(Regulation 2009)

Time : 3 Hours   Answer ALL Questions   Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are hidden and exposed terminal problems in wireless network scenario?

2. What is Direct Sequence Spread Spectrum? How does it work in CDMA technology?

3. List some of the key requirements of wireless LANs.

4. Show the protocols used in MAC and physical layers of the two nodes and AP, when a frame is being transmitted.

5. What is ATIM Window?

6. What is Localization? How is it achieved in GSM?

7. State the advantages of M-TCP.

8. Define Explicit Congestion Notification mechanism.

9. List the capabilities offered by WMLScript but not supported by WML.

10. State the differences between WAP 1.x and i-mode?

Part – B (5 x 16 = 80 marks)

11. Discuss in detail the various TDMA technologies for wireless transmission.   (16)

12. a) Explain the following mechanisms:

      (i)   Basic DFWMAC_DCF using CSMA/CA.   (8)

      (ii)   DFWMAC-DCF with RTS/CTS Extension.   (8)

(OR)

b) Consider four different cellular systems that share the following characteristics. The frequency bands are 825 to 845 MHz for mobile unit transmission and 870 to 890 MHz for base station transmission. A duplex circuit consists of one 30-kHz

channel in each direction. The systems are distinguished by the reuse factor, which is 4, 7, 12 and 19 respectively.

(i) Suppose that in each of the systems, the cluster of cells (4, 7, 12 and 19) is duplicated 16 times. Find the number of simultaneous communications that can be supported by each system. (6)

(ii) Find the number of simultaneous communications that can be supported by a single cell in each system. (5)

(iii) Suppose the cell size is the same in all four systems and a fixed area of 100 cells is covered by each system. Find the number of simultaneous communications that can be supported by each system. (5)

13. a) (i) Discuss various possible handover scenarios in GSM. (8)

(ii) Illustrate the following situations and the updations that take place in HLR and VLR. Assume that the Chennai user (C1) has gone to Delhi. Delhi user (D1) has gone to Mumbai. Mumbai user (M1) has gone to Bangalore. If the local charge is Rs. 1/- and roaming charge is Rs. 5/-, find the charges for each user for the following calls. (8)

(i) C1 is calling M1.

(ii) D1 is calling C1.

(iii) Another Chennai user (C2), who is now in Chennai, is calling M1.

(OR)

b) Discuss about the architecture and transmission protocol reference model of GPRS System. (16)

14. a) (i) Illustrate with an example, using Mobile IP, explain the sequence of operations and updation of the corresponding tables when a mobile node moves from its home network to two foreign networks one by one and settle down to its parent network. Assume that the corresponding node is located in any one of the two foreign networks. Also show how optimization is done between corresponding node and foreign agent for communication. (8)

(ii) Using I-TCP and Snooping-TCP, explain how packets are transmitted under

normal condition and how transmission is not disturbed during handover. Illustrate these two occasions using socket addresses. (8)

(OR)

b) Explain the characteristics and configuration parameters that need to be considered while deploying the applications over 2.5G/3G wireless links. (16)

15. a) Discuss in detail the architecture of WAP and illustrate with an example, how communication takes place between client and server passing through all protocols.

(16)

(OR)

b) (i) Explain how security is achieved in WAP environment with the help of WTLS.

(10)

(ii) Discuss the necessary features of Wireless Markup language. (6)