Code No. : 5297

# FACULTY OF INFORMATICS
## B.E. 4/4 (IT) I Semester (Main) Examination, December 2011
## WIRELESS AND MOBILE COMMUNICATION

Time: 3 Hours]

[Max. Marks: 75

**Note** : Answer **all** questions from Part **A**, Answer **any five** questions from Part **B**.

### PART – A (25 Marks)

1. Write salient features of third Generation (3G) wireless networks. 3

2. Define frequency Reuse. Relate capacity in terms of number of channels and clusters. 3

3. Define pathloss and far-field distance. 2

4. List the parameters that affect the radio wave reflection from dielectrics, and explain them briefly. 2

5. List the advantages offered by digital modulation. 2

6. Sketch block diagrams for transmitter and receiver of a direct sequence spread spectrum (DS-SS) system with binary phase modulation. 3

7. Write the features of Time Division Multiple Access (TDMA) scheme. 3

8. Sketch GSM system architecture and briefly explain the subsystems. 3

9. Define Tunneling and encapsulation. 2

10. Write differences between traditional TCP and Mobile TCP. 2

### PART – B (50 Marks)

11. a) List three popular capacity improvement techniques. Explain one technique in detail. 5

    b) A hexagonal cell within a four-cell system has a radius of 1.387 km. A total of 60 channels are used within the entire system. If the load per user is 0.029 Erlangs, and $\lambda = 1$ call/hour, compute the following for an Erlang C system that has a 5% probability of a delayed call with the number of trunked channels, C = 15; Traffic intensity = 9.0 Erlangs :

       i) How many users per square kilometer will this system support ?

       ii) What is the probability that a delayed call will have to wait for more than 10s ? 5

12. Describe Free Space propagation model. Find the far-field distance for an antenna with maximum dimension of 1m and operating frequency of 900 MHz. (8+2)

13. Write a detailed note on performance of direct sequence spread spectrum. 10

14. Describe forward CDMA channel modulation process. 10

15. What are the goals and requirements of Mobile IP ? Write a note on Dynamic Host Configuration Protocol. (5+5)

16. Explain different handoff strategies. 10

17. Write short notes on : 10
    a) Grade of service
    b) Global System for Mobile (GSM)
    c) Agent advertisement and discovery.