

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 network. 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.