FACULTY OF INFORMATICS
B.E. 4/4 (IT) I Semester (Suppl.) Examination, June 2012
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. Explain the terms : TDMA, FDMA,s SDMA.   **3**

2. Define Co-channel Reuse Ratio and signal to Interference Ratio.   **2**

3. Define Fraunhofer region. Write the expression for Fraunhofer distance.   **3**

4. List the parameters that affect the signal strength in reflection, diffraction and scattering of radio waves.   **3**

5. Define Power Efficiency, Bandwidth Efficiency and Power Spectral Density.   **3**

6. Describe Nyquist criterion for intersymbol interference.   **3**

7. Linear modulation schemes have very good spectral efficiency, use of linear RF amplifiers lead to poor power efficiency and use of nonlinear amplifiers results in loss of spectral efficiency. Name three techniques to get around the difficulties mentioned.   **2**

8. What is a Pseudo-Noise (PN) sequence ? Give one method to generate a PN sequence.   **2**

9. Write goals of mobile IP.   **2**

10. What is snooping TCP ? Explain briefly.   **2**

PART – B   (50 Marks)

11. a) Explain the concept of cellular communication with suitable illustrations.   5

    b) Describe Trunking theory.   5

12. a) Describe Fresnel Reflection coefficient.   5

    b) Demonstrate that if medium 1 is free space and medium 2 is a dielectric, both
       reflection coefficient for the cases of vertical and horizontal polarization
       approaches 0° regarders of relative permittivity ε_r.   5

13. Explain one pulse shaping technique that simultaneously reduces the intersymbol
    interference effects and the spectral width of a modulated digital signal.   10

14. a) Define Frame-efficiency of a TDMA system and explain.   5

    b) If a normal GSM time slot consists of six trailing bits, 8.25 guard bits, 26
       training bits and two traffic bursts of 58 bits of data, find the frame efficiency. 5

15. Write a detailed note on Mobile network layer.   10

16. a) Describe IP Packet delivery.   5

    b) Explain Tunneling and Reverse Tunneling.   5

17. a) Present a timing diagram illustrating how a call initiated by a mobile is
       established.   10

    b) Sketch a figure and explain small-scale and large scale fading in terms of
       received power and T-R separation.

    c) Write notes on digital modulation techniques.