Code No. 3164

FACULTY OF INFORMATICS
B.E. 4/4 (IT) First Semester (Suppl.) Examination, June/July 2011
WIRELESS AND MOBILE COMMUNICATIONS

Time : Three Hours]

[Maximum Marks : 75

Note :— Answer **ALL** questions from Part A. Answer any **FIVE** questions from Part B.

PART—A (Marks : 25)

1. Give salient features of Third-Generation Wireless Networks.
3

2. Write a mathematical expression to show how the average received signal strength at any point decays as a power law of the distance of separation between a transmitter and receiver. What are the typical range of values for path loss exponent in urban cellular systems ?
2

3. A transmitter produces 50 W of power applied to a unity gain antenna with a 900 MHz carrier frequency. Find transmitter power and receiver power in terms of dBm and dBW at a free space distance of 100 m. Assume unity gain for receiver antenna.
3

4. Write a mathematical expression for Okumura Outdoor Propagation Model and give the range of values of frequencies, distances and antenna heights that are applicable to this model.
2

5. What is Modulation ? Write equations for sinusoidal modulating signal and the corresponding amplitude modulated signal with a modulation index of value 0·5.
2

6. What are the advantages in using Constant-Envelope Modulation for mobile radio communications ?
2

7. Explain duplexing in wireless telephone systems.
2

8. Sketch and explain the GSM system architecture.
3

9. What are the requirements of mobile IP as a standard to enable mobility in the internet ? Explain.
3

10. Write advantages and disadvantages of Mobile TCP.
3

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PART—B (Marks : 50)

11. Discuss Handoff strategies highlighting various practical considerations and Gaurd Channel concept. 10

12. Describe Durkin's Outdoor Propagation Model and illustrate Terrain Profile Reconstruction using diagonal interpolation. 10

13. Describe Quadrature Phase Shift Keying (QPSK) Linear Modulation Technique covering the following :

    (i) Spectrum and Bandwidth of QPSK signals.

    (ii) QPSK transmission and detection techniques. 10

14. Why are Multiple-Access techniques needed in wireless communications ? Describe capacity of cellular systems relating the following : (i) Carrier-to-Interface ratio (ii) Channel Bandwidth (iii) Co-channel reuse ratio (iv) Radio capacity. 10

15. Describe Protocols and explain Mechanisms for Mobile IP and Dynamic Host Configuration Protocol. 10

16. Describe Traffic-Routing in Wireless Networks. 10

17. Why are Pulse-Shaping techniques required ? Describe Raised Cosine Rolloff Filter with special reference to the following : (i) Intersymbol Interface (ii) Spectral Bandwidth. 10