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**Question Paper Code : 75519**

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Elective

Software Engineering

XCS 017 — WIRELESS TECHNOLOGY

(Common to 5 year M.Sc. Information Technology/M.Sc. Computer Technology)

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is a Delay Doppler spread function?
2. Write the expression for free space propagation Model at the output of the receiving antenna.
3. Define level Crossing Rate (LCR) in a fading channel.
4. Draw the signal constellation of a  $\frac{\pi}{4}$  shifted QPSK.
5. How is coherent reception performed in a flat slow fading Rayleigh channel?
6. What are conflict free Multiple Access Technologies?
7. List the characteristics of CDMA.
8. Give the specification of WWAN systems.
9. What do you mean by Home RF?
10. What is the IEEE specification for WLAN?



PART B — (5 × 16 = 80 marks)

11. (a) Consider a fading channel which enlists a Doppler frequency shift uniformly distributed between  $-10$  Hz and  $10$  Hz. Determine
- (i) Mean Doppler shift
  - (ii) RMS Doppler spread
  - (iii) Coherence Time

Or

- (b) How does PN sequences perform in Spread spectrum Technology? Design suitable spreading sequence of length 7 using shift registers?

12. (a) How does cell splitting and cell sectoring increase the capacity in cellular systems. Illustrate with a cluster size of seven cells.

Or

- (b) Explain in detail the difference between integration of data into a voice oriented network and integration of voice onto a data oriented network.

13. (a) Explain the Communication Mechanism in GSM technology.

Or

- (b) How do you differentiate privacy with security? What are the security mechanism in wireless networks?

14. (a) Draw the Network Reference Architecture for the Universal Mobile Telecommunication System (UMTS) and explain the Radio network systems.

Or

- (b) How does CDPD and GPRS provide higher data rates? Explain its main features.

15. (a) Explain the MAC management sublayer in IEEE 802.11.

Or

- (b) Draw and explain the complete protocol stack for the implementation of cordless telephone over Bluetooth.