Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 65010

5 Year M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

Elective

Software Engineering

XCS 017 — WIRELESS TECHNOLOGY

(Common to 5 Year M.Sc. Information Technology and 5 Year M.Sc. Computer Technology)

(Regulation 2003)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State the major factors causing propagation path loss.

2.   Define db.

3.   Indicate a few MAC schemes from wired network which fail in a wireless scenario.

4.   What is cellular systems?

5.   Name the routing which are preferred by GSM.

6.   List the security services offered by GSM.

7.   Name any two mobile network protocols.

8.   Bring out the importance of the service offered as SAP.

9.   Name any four network from IMT 2000 families.

10. Contrast an adhoc network from a cellular network.

PART B — (5 × 16 = 80 marks)

11. (a) (i) In your city's urban environment when mobile radio communication system which uses tall cell-cite towers and use LOS propagation are deployed. How will you predict the large scale received signal strength over distances of several kilometers. Develop a propagation model for predicting the path loss. (8)

    (ii) Explain the characteristics of wireless medium with an example. (8)

Or

    (b) Discuss the salient features of FHSS and DSSS which are used in wireless communication to achieve low data rates. (16)

12. (a) Consider a geographical service area of a cellular system as 4200 km². A total of 1001 radio channels are available for handling traffic. If the area of a cell is 12 km², find out

    (i) How many times would the cluster size of 4 have to be replicated in order to cover the entire service area? Calculate the number of channels per cell and the system capacity.

    (ii) If the cluster size is increased from 4 to 7, then does it result into increase in system capacity?

Or

    (b) Analyse how the integration of voice and data traffic is handled in a wireless scenario. (16)

13. (a) Summarise the features of various mechanisms involved in supporting a mobile environment. (16)

Or

    (b) How is access to the World Wide Web and file system achieved through the mobility management schemes? Also include how security is maintained.

14. (a) Explain a multiple axis technology in 2G which employs soft handoff, efficient power control, consumes less power at the mobile unit and has resistance to multipath and fading.

Or

    (b) Write brief notes on (i) data oriented CDPD network and (ii) mobile application protocol. (16)

15. (a) (i) Give the IEEE 802.11 WLAN protocol architecture. Summarise the key parameters. (8)

    (ii) Show how the IEEE 802.15 standard is a family of protocols to address the needs of wireless personal area networks at different rates. (8)

Or

    (b) (i) List the challenges and issues linked with mobile adhoc networks.

    (ii) Give the wireless Geo location system architecture and its applications.

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