III Year - II Semester
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MOBILE COMPUTING
(OPEN ELECTIVE – II)

COURSE OBJECTIVE:
1. To understand the typical mobile networking infrastructure through a popular GSM protocol
2. To understand the issues and solutions of layers of mobile networks, namely MAC layer,
3. To understand the issues and solutions of Mobile Network Layer
4. To understand the issues and solutions of Mobile Transport Layer
5. To understand the ad hoc networks and related concepts.

COURSE OUTCOMES:
1. Understand the GSM, GPRS and software model for mobile computing..
2. Understand SDMA, FDMA, TDMA, CDMA
3. Understand the functionality of Mobile network layer.
4. Understand the functionality of Mobile Transport Layer.
5. Demonstrate the Adhoc networks concepts and its routing protocols.

UNIT-I
Introduction: Mobile Communications, Mobile Computing – Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices. GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS.

UNIT-II
(Wireless) Medium Access Control (MAC): Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA, Wireless LAN/(IEEE 802.11).

UNIT-III
Mobile Network Layer: IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP.

UNIT-IV
Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks. Database Issues: Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

UNIT-V

Data Dissemination and Synchronization: Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination, Data Synchronization – Introduction, Software, and Protocols. Mobile Ad hoc Networks (MANETs) : Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Mobile Agents, Service Discovery. Protocols and Platforms for Mobile Computing: WAP, Bluetooth, XML, J2ME.

TEXT BOOKS:
1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2009.
2. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

REFERENCE BOOKS
1. ASOKE K TALUKDER, HASAN AHMED, ROOPA R YAVAGAL, "Mobile Computing, Technology Applications and Service Creation" Second Edition, McGraw Hill.
2. UWE Hansmann, LotherMerk, Martin S. Nocklous, Thomas Stober, "Principles of Mobile
   Computing," Second Edition, Springer.