

2025

M.Sc. 1st Semester Examination

COMPUTER SCIENCE

Paper : COSE404C8

(Mobile Computing Lab)

(Practical)

Full Marks : 15

Time : One Hour

The figures in the margin indicate full marks.

Answer any *one* question : $10 \times 1 = 10$

(Choose the question on the lottery basis)

1. Configure a basic Wireless LAN (WLAN) using access points and clients. Capture and analyze beacon frames, probe requests, and associations using Wireshark.
2. Simulate a wireless network with multiple nodes to demonstrate and analyze the Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) protocol.

3. Create a simulation to model and compare Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA) techniques in a shared medium.
4. Configure Mobile IP on a network simulator to demonstrate how a mobile node can maintain its IP address while moving between different networks.
5. Simulate a TCP file transfer over a wireless link to analyze performance issues. Implement and test a TCP variant like TCP Vegas or Westwood to observe improvements.
6. Configure and test different security protocols on a WLAN (WEP, WPA2, WPA3) and use Wireshark to analyze the handshake process and encrypted traffic.
7. Establish a Bluetooth Personal Area Network (PAN) between two devices and demonstrate a simple data transfer application.

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8. Simulate a simple WSN with sensor nodes and a sink to collect and visualize environmental data like temperature.

9. Develop a basic Wireless Application Protocol (WAP) page using Wireless Markup Language (WML) to display information on a mobile emulator.

10. Simulate a Mobile Ad-hoc Network (MANET) and implement the Ad-hoc On-Demand Distance Vector (AODV) routing protocol. Analyze route discovery and maintenance.

Practical Notebook and Viva-voce : 05 marks
