Ref. No.: **Ex/IT/PC/B/T/312/2024(S)**

Bachelor of Information technology
3rd Year 1st Semester Supplementary Examination 2024
Sub: Wireless and Mobile Networks

Full Marks: 100 **Time: 3 hours**

Answer any *five* questions

1. (6+6+4+4)
   a. List important features of 1G, 2G, 3G, 4G, and 5G systems.
   b. What is the main physical reason for the failure of many MAC schemes known from wired networks? What is done in wired networks to avoid this effect?
   c. What are the benefits of reservation schemes? What are the disadvantages of reservation schemes?
   d. List some problems of wireless networks in comparison of wired networks?

2. (5+5+5+5)
   a. Define the terms: Vertical handoff, MSRN and IMEI.
   b. Define the role of HLR and VLR in the wireless wide area network (WWAN) architecture.
   c. Explain with an example what do you mean by pair wise orthogonal property?
   d. List the databases used in GSM along with their characteristics.

3. (5+5+5+5)
   a. Briefly explain the problems that TCP encounter in wireless networks.
   b. What is the reaction of standard TCP in case of packet loss? In what situation does this reaction make senses and why is it quite often problematic in case of wireless networks?
   c. List some advantages and disadvantages of split connection approach to enhance TCP performance in wireless networks.
   d. Write short note on: TCP Snoop.

4. (4+4+7+5)
   a. Explain why IP fails to work in mobile networks.
   b. What do you mean by address auto-configuration in MIPv6?
   c. Explain with diagram the paths involved when two mobile hosts communicate using MIPv6 and both are in foreign network.
   d. What is triangular routing? How triangular routing problem is eliminated in MIPv6?

5. ((6+6)+8)
   a. Describe the following functionalities in DSR.
      i. Route discovery
      ii. Route maintenance
   b. Compare between DSDV, DSR and AODV.

6. (6+4+10)
   a. With a diagram describe how collision is avoided using randomization algorithm in CSMA/CA.
   b. Describe how collision is avoided using NAV signal in WLAN.
   c. Power is a real crisis for wireless and mobile devices. Describe a suitable power management scheme for infrastructure WLAN.

7. Write short notes on: (10+10)
   a. MAC Protocols for ad-hoc networks
   b. Handoff mechanism of GSM