

**Jadavpur University**  
**Bachelor of Information technology**  
**3<sup>rd</sup> Year 1<sup>st</sup> Semester Examination 2018**  
**Sub: Wireless Networks**

Full Marks: 100

Time: 3 hours

Answer any five questions

1. (6+6+8)
  - a. Name the wireless access techniques used in 1G, 2G, and 3G wireless systems.
  - b. Describe the steps used in a handoff process of a cellular system.
  - c. What do you mean by hidden terminal and exposed terminal problem?
2. (4+8+8)
  - a. Define the role of HLR and VLR in the wireless wide area network (WWAN) architecture.
  - b. Two senders, A and B, want to send data. CDMA assigns the following chip sequences:  $A_c=(010011)$ ,  $B_c=(110101)$ . Sender A sends a 1 and B sends a 0 bit. A random noise (1, -1, 0, 1, 0, -1) is added to the transmitted signal. What can the receiver detect for sender A and B respectively?
  - c. List three important entities in GSM architecture and explain their functions.
3. (6+4+10)
  - a. Distinguish split connection and end-to-end implementation in TCP for a wireless environment.
  - b. When a mobile device crosses cell boundary, a handoff takes place. How does this fact affect TCP performance?
  - c. Describe the localization approach to improve TCP performance in wireless environment.
4. Write short notes on: (10+10)
  - a. Explicit Notification Approach
  - b. MAC Protocols for ad-hoc networks
5. (5+4+4+5+2)
  - a. Compare source routing and hop-by-hop routing.
  - b. How does the symmetry of wireless links influence the design of routing algorithm for mobile ad-hoc networks?
  - c. Why is routing in multi-hop ad-hoc networks complicated, what are the special challenges?
  - d. Explain how DSDV avoids count-to-infinity problem.
  - e. What do you mean by promiscuous receive mode?
6. (4+6+6+4)
  - a. List different IFS of IEEE 802.11 according to priority level and mention the type of traffic/service used in each IFS.
  - b. Power is a real crisis for wireless and mobile devices. Describe a suitable power management scheme for infrastructure WLAN.
  - c. With a suitable diagram describe how fairness problems regarding channel access solved in IEEE 802.11.
  - d. Describe how collision is avoided using NAV signal in WLAN.
7. (6+2+3+9)
  - a. What do you mean by neighbor notification and address auto-configuration in MIPv6?
  - b. What is the difference between the care-of-address and co-located care-of-address?
  - c. What are the functions of home agent and foreign agents in mobile IP protocols?
  - d. In mobile IPv6, depending on whether or not the correspondent node has knowledge of the mobile's current care-of-address, its messages destined for the mobile in its current location are sent in different ways.
    - i. Discuss how messages should be sent to the mobile in its current location.
    - ii. What are the advantages of mobile IPv6 compared with mobile IPv4?