

BACHELOR OF COMPUTER SCIENCE AND ENGINEERING
Fourth Year, Second Semester Examination, 2017

Mobile Computing

Time- Three Hours

Full Marks-100

Part A

Answer any three questions

(2 marks are reserved for cleanliness)

1. (a) Discuss how the challenges in wireless communication due to low bandwidth can be overcome. Give suitable examples in support of your discussion. How does a mobile device cope with *bandwidth variability*?
(b) Compare cellular network with ad hoc wireless network. Why mobile hosts will require more intelligence in ad hoc network in comparison with cellular network?
(c) What is a wireless mesh network? 6+8+2=16

2. (a) What is an *exposed terminal problem*?
(b) What are the different types of security threats in ad hoc wireless networks?
(c) With an example explain how route maintenance is done in AODV. What does a route table in AODV store? 4+5+7=16

3. (a) What are the different types of routing protocols in MANET?
(b) What are the different control packets used for route discovery in DSR routing protocol? Explain the use of each such control packet.
(c) How does a wireless sensor network differ from a MANET? 4+8+4=16

4. (a) "Idle listening consumes significant energy". Periodic listen and sleep is a solution to this problem. Explain how energy is saved by this solution. How does a sensor node in wireless sensor network maintain its schedule for periodic listen and sleep?
(b) Explain the basic B-MAC protocol in wireless sensor network.
(c) What is preamble sampling? 6+6+4=16

5. (a) How do data-centric routing protocols differ from the id-centric routing protocols?
(b) What are the problems in classical flooding?
(c) Explain how a route is set up in directed diffusion routing. 4+4+8=16

Part B

Answer **Question No. 6** and any **TWO** from the rest

6. In a sensor network configuration, the maximum no of routers supported is 2, where each router supports 3 end devices. If tree topology is followed, the maximum depth of the tree could be 4. If the devices support ZigBee protocol stack, how would the addresses be allocated? How many devices would it support? 10
7. (a) How does a mobile node obtain a care-of address in IPv6?
(b) Who maintains binding update list when IPv6 is followed? What are its contents?
(c) Describe the following terms and their significance in IPv6: anycast addressing, site local address, link local address. 6+6+8
8. (a) Describe minimal encapsulation.
(b) How does a mobile node discover a foreign network? Why is it necessary to send router advertisements even with the B bit set?
(c) Can a Foreign Agent communicate with the mobile node when the node is in that foreign network? Justify your answer. 5+(10+2)+3
9. (a) How can a mobile node save battery power and still remain connected in a wireless LAN?
(b) What are the different frame spacing used in IEEE 802.11 WLAN standard? Why do you think one frame spacing is not sufficient?
(c) Describe Distributed Coordination Function (DCF) that is mandatory in IEEE 802.11 WLAN standard. 10+5+5