M.TECH IN COMPUTER TECHNOLOGY 4TH SEM. EXAM. - 2018

ADHOC & SENSOR NETWORK
(Please use separate answer scripts for each Group)

Time: 3 hours Full Marks: 100

Group A

Answer question no.1 and any two from the rest

1. Answer any five 5X2=10
   i. What is known as in-network processing?
   ii. Why a back-off timer is used in the CSMA/CA mechanism?
   iii. Explain why collision is an issue in random access mechanisms, but not in controlled or channelizing protocols.
   iv. What is Clear Channel Assesment?
   v. What is network lifetime in WSNs?
   vi. Explain barrier coverage problem.
   vii. What are implosion and overlap problems?
   viii. What is duty cycle?

2. a) What is the reason CSMA/CD can't be used on wireless networks? Explain three strategies of CSMA/CA to avoid collisions on wireless networks. 3+7
   b) What are the main issues need to be addressed while designing a MAC protocol for ad hoc wireless networks? Explain them. Explain how MACA can be used to solve those issues. What is the main problem in MACA? How it can be solved? 2+4+4

3. a) How wake-up radio concept is adopted in WSN? What is duty cycle and how it is calculated in WSN? Explain the procedure of S-MAC protocol. 2+2+6
   b)Explain T-MAC protocol. Discuss how T-MAC can address variable load in the network. 6+4

4. a) Explain the directed diffusion routing technique with the help of suitable diagrams. What are the main pros and cons of this protocol? 6+4
   b) Explain LEACH protocol for routing . What problem may occur if cluster heads are fixed? How to solve this? 6+2+2

5. a) Discuss two range based localization techniques and two range free localization techniques. What is multi-lateration? (4+4)+2
   b) Explain the sponsored coverage calculation technique of coverage preserving node scheduling scheme. For fault tolerance, k-connectivity is desirable, explain it. 8+2

Group B

Answer question no.6(a or b) and any two from the rest

6. a) Describe Split TCP protocol. State its pros and cons. 10

   OR

   b) In a network configuration, the maximum no of routers supported is 2, where each router supports 3 end devices. Maximum depth of resulting topology (preferably tree) could be 3. If the devices support ZigBee protocol stack, show the resulting network configuration. What is the range of addresses assigned to router at depth d according to ZigBee protocol stack? 10

7. a) Describe the topology discovery phase of BlueMesh protocol.
   b) Describe the states associated with a Bluetooth enabled device. 12+8

8. a) Discuss about battery aware MAC protocol.
   b) Describe Common Power protocol. When is it not suitable? 12+8

9. a) Describe a MAC protocol where data transfer process is initiated by receiver.
   b) Describe a contention based MAC protocol with reservation mechanism. 10+10