

WIRELESS COMMUNICATION AND MOBILE COMPUTING

Time: 3 hours

Full Marks: 100

Answer question 1 and any four questions
All questions carry equal marks

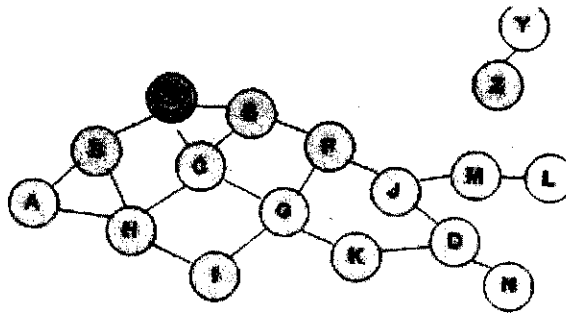
1. Answer any ten

10X2=20

- i. What are the main problems of signal propagation?
 - ii. What properties of radio wave can be modified to modulate information on it?
 - iii. Why higher frequency wave is used in radio signal based communication?
 - iv. What is network lifetime?
 - v. What do you mean by end-to-end delay?
 - vi. What is multipath propagation?
 - vii. State the need of directional antennas.
 - viii. Why multi-hop routing required?
 - ix. Why a back-off timer is used in the CSMA/CA mechanism?
 - x. What do you mean by control packet overhead?
 - xi. What is fast fading?
 - xii. What is slow start?
2. a) Explain (with figure) the problem of "hidden and exposed terminals". Explain with interaction diagram what happens in the case of such terminals if MACA is used. Discuss application scenarios where contention based, reservation based and packet scheduling based MAC protocols can be used. 3+3+4
- b) Explain the MACA-BI protocol. List the advantages and disadvantages of this scheme. What is the main difference between MACA-BI and MARCH. 5+3+2
3. a) Explain the working principle of D-PRMA with frame structure. Discuss the frame format of CATA. 6+4
- b) Discuss the reservation mechanism in RTMAC. Explain the scheduling mechanism of distributed priority scheduling (DPS) scheme. 5+5
4. a) How does the Zone Routing Protocol (ZRP) combine proactive and reactive routing? – Explain. What function do the peripheral nodes have? Is a table-driven routing protocol suitable for high mobility environments? –Justify your answer. 4+3+3
- b) Explain AODV routing protocol with suitable figure(s)? Discuss the performance differences between AODV and DSDV routing algorithms. 5+5

5. a) Explain the DSR algorithm step wise considering the figure given below where message to be sent from S to D.

10



- b) What are the three physical layer technologies being used in 802.11 wireless networking? Explain the distribute coordination function (DCF) of 802.11 MAC layer. Why different inter frame spaces are required?

3+5+2

6. a) Explain the architecture of Bluetooth networks and list the elements of the Bluetooth protocol stack. What is a piconet? Explain the paging mechanism to establish a piconet.

5+2+3

- b) Explain the requirements for a mobile IP. Explain the tunneling mechanism. Discuss the inefficiencies of mobile IP regarding data forwarding from a correspondent node to a mobile node (with suitable diagram).

3+3+4

7. a) How TCP detects and mitigates congestion? Why traditional TCP is not suitable for adhoc wireless networks? How does TCP detects a packet loss? Explain the working procedure of I-TCP mechanism (with suitable figure).

2+2+2+4

- b) Explain the functioning of Snooping TCP (with suitable figure). What are the main drawbacks of snoop protocol? Explain how M-TCP can overcome the limitation of snoop protocol.

5+2+3