JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, April-2015
WIRELESS LANS AND PANS
(Embedded Systems)

Time: 3 Hours

Max. Marks: 60

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 marks = 20

1.a) Compare and contrast among 1G to 3G cellular Communications System.
 b) List out the advantages and disadvantages of choosing UHF Technology.
 c) Discuss about Hidden Terminal problem in IEEE 802.11 WLAN.
 d) Write a short notes on Bluetooth Piconet.
 e) Draw the PHY layer packet structure of IEEE 802.15.4.

PART - B

5 × 8 marks = 40

2. A WLAN accommodates 100 stations running the same application. The transmission rate per application is 4 Mbps and the station uses slotted ALOHA protocol. The total traffic produced by the stations is assumed to form a Poisson process. What is the maximum throughput in Erlangs? What is the maximum throughput in Mbps? What is the maximum throughput in Mbps for each station?
[8]

OR

3. Consider a WLAN installation in which maximum propagation delay is 0.5 ms. The WLAN operates at a data rate of 12Mbps, and each packet is 600 bits. Calculate the throughput with:
 a) an Unslotted nonpersistent
 b) a slotted persistent
 c) a slotted I-persistent CSMA Protocol.
[3+3+2]

4. Discuss in detail about three Wireless Local Area Network (WLAN) Topologies.
[8]

OR

5. With a neat diagram explain the popular ISM bands in use by Wireless LAN Technologies.
[8]

6. Consider a FH/MFSK WLAN system in which a pseudo random noise (PN) generator is defined by a 20 stage linear feedback shift register with a maximal length sequence. Each state of register dictates a new center frequency within the hopping band. The maximum step size between carrier frequencies (hop-to-hop) is 200HZ. The register clock rate is 2kHZ. 8-ary FSK modulation is used and the data rate is 1.2kbps.
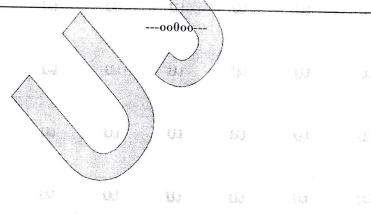   a) What is hopping bandwidth?
   b) What is chip rate?
   c) How many chips are there in each symbol?
   d) What is processing gain? [2+2+2+2]

OR

7. Compare and contrast between MAC access schemes in WLAN. [8]

8. Explain the steps in Master(B)/ Slave(A) role switching. [8]

OR

9. Describe the procedure for locally coordinated Scheduling (LCS) to achieve efficient scatternet wide schedule. [8]

10. With a neat diagram explain the IEEE 802.15.3 MAC Super Frame. [8]

OR

11. Explain the process of obtaining forward and reverse path formation in AODV protocol. [8]

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