Hall Ticket No | | | | | | | | | | | Question Paper Code: BES002

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January/February, 2018

Regulation: IARE–R16

WIRELESS LANS AND PANS

(Embedded Systems)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) Compare 1G to 4G cellular systems with a neat block diagram. **[7M]**
   (b) Discuss briefly about the 4G technologies. **[7M]**
2. (a) What do you mean by Carrier Sense and Collision Detection? Explain briefly. **[7M]**
   (b) What are the performance techniques used in the design of collision detection protocol and show that the best channel utilization with pure ALOHA is 18.4%. **[7M]**

UNIT – II

3. (a) What are the three media that can be used for transmission over wireless LANs? Describe the direct sequence spread spectrum technology with an example. **[7M]**
   (b) Consider a WLAN installation in which the maximum propagation delay is 0.4 sec. The WLAN operates at a data rate of 10 Mbps, and packets have 400 bits.Calculate the normalized throughput with **[7M]**
      i. An unslotted nonpersistent
      ii. A slotted persistent CSMA protocol
4. (a) List out the properties of Pseudo Noise sequence used in direct sequence spread spectrum technique. **[7M]**
   (b) List out the advantages, limitations and challenges of WLAN technology. **[7M]**

UNIT – III

5. (a) With a neat sketch explain the network topologies of basic service set (BSS) mode and extended service set (ESS) mode. **[7M]**
   (b) What is the technique used for the purpose of selecting the access points by the stations and list out the steps involved in the technique. **[7M]**
6. (a) Discuss in detail about the hidden terminal problem and collision avoidance corresponding to MAC layer issues. **[7M]**
   (b) With neat sketch explain the interference scenarios between Bluetooth and IEEE 802.11 device. **[7M]**

UNIT – IV

7. (a) What is WPAN and write short notes on Bluetooth technology includes characteristics, applications and air interface parameters. **[7M]**

   (b) Explain neatly about the Bluetooth protocol stack. **[7M]**

8. (a) Explain the formation of piconet and scatternet topologies with neat sketch. **[7M]**

   (b) Explain the Bluetooth packet transmission/flow structure clearly. **[7M]**

UNIT – V

9. (a) Write down about topologies that ZigBee technology supports. **[7M]**

   (b) Draw the IEEE 802.15.4 LR-WPAN device architecture and discuss about channel frequencies and PHY packet structure. **[7M]**

10. (a) Explain clearly the MAC frame format and super frame structure of IEEE 802.15.4 LR-WPAN. **[7M]**

    (b) Briefly discuss about IEEE 802.15 working group for WPANS, and describe the IEEE 802.15.3MAC and PHY layer in brief. **[7M]**

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