

Hall Ticket No

--	--	--	--	--	--	--	--	--	--

Question Paper Code: BES002



INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)

M.Tech I Semester End Examinations (supplementary) - July, 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

- (a) Write short notes on 1st, 2nd, 3rd and 4th generation mobile systems. [7M]

(b) Discuss about key challenges and applications of 4G wireless systems. [7M]
- (a) Define the dwell time in FHSS and spreading ratio. Which spread spectrum technique represents each bit in the frame by multiple bits in the transmitted frame. [7M]

(b) List out the advantages of WLAN technology and what are the reasons for Wireless LANs not popular? [7M]

UNIT – II

- (a) Describe the direct sequence spread spectrum and frequency hopped spread spectrum techniques with neat block diagrams. [7M]

(b) Define multiplexing. Differentiate between multiple access and multiplexing. [7M]
- (a) What is multipath interference and how do you solve this problem? [7M]

(b) How does the CSMA-CA protocol work? Explain the steps clearly. [7M]

UNIT – III

- (a) What is hidden station problem and exposed station problem? Explain in brief. [7M]

(b) Discuss in detail about the medium access control layer frame format corresponding to IEEE 802.11. [7M]
- (a) Briefly explain about pure ALOHA, slotted ALOHA and CSMA protocols and compare their performance in terms of throughput. [7M]

(b) What protocols are used at MAC layer. Explain TDMA with its frame format. [7M]

UNIT – IV

- (a) Write down the characteristics and applications of Bluetooth. [7M]

- (b) What is the hopping rate of Bluetooth, and how many bits are transmitted in one slot? If each frame of the HV3 voice packet in Bluetooth carries 80 bits of sample speech, what is the efficiency of the packet transmission? How often do HV3 packets have to be sent to support 64 kbps voice in each direction? [7M]
8. (a) What is Adhoc networking? Distinguish between Bluetooth piconet architecture and Bluetooth scatternet architecture with neat block diagrams. [7M]
- (b) A symmetric 1-slot DM1 link between a master and a slave carries 136 bits per slot at a rate of 800 slots per second (every other slot) in each direction. Find the associated data rate. [7M]

UNIT – V

9. (a) Write about the 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) Write the characteristics and applications of IEEE 802.15.4 LR-WPAN. [7M]

– o o ○ o o –