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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Regular) - January, 2019

Regulation: IARE-R18

WIRELESS LANS AND PANS

Time: 3 Hours

(ES)

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) How does 4G networks provide more speed than 3G networks? Why doesn't a 3G mobile phone support 4G networks? [7M]

(b) A large population of ALOHA users generates 50 request/sec. Time is slotted in units of 40msec. [7M]

 - What is the chance of success on the first attempt?
 - What is the probability of exactly k collisions and then a success?
 - What is the expected number of transmission attempts needed.
 - What is the channel load G.
- (a) Which multiple access technique is used by IEEE 802.11 standard? Explain in detail about CSMA/CA. [7M]

(b) Discuss about technical issues in wireless communications and what are the advantages of wireless networks. [7M]

UNIT – II

- (a) Explain the principle behind spread spectrum technique and how this is used to minimize interference in a CDMA system. Also determine the throughput efficiency of the system. [7M]

(b) What are the issues that should be considered in deploying the WLAN's? [7M]
- (a) Explicate wireless local area network technologies in detail and illustrate the comparisons between them. [7M]

(b) How pseudo random numbers are generated? Explain FHSS and DSSS / CDMA in detail. [7M]

UNIT – III

- (a) Explain about hidden node issue problem specific to WLAN in MAC layer. [7M]

(b) Elucidate the security services provided by IEEE 802.11 [7M]
- (a) Discuss in detail about hidden terminal problem, reliability, collision avoidance and congestion avoidance corresponding to MAC layer issues. [7M]

(b) What is the significance of physical layer? With design flow diagram, explain different sub layers present with- in the sub layer. [7M]

UNIT – IV

7. (a) How does Bluetooth fit in with Wifi? How many devices can communicate concurrently? Name few applications of Bluetooth? [7M]
- (b) Explain about the Load Adaptive algorithm. What are the parameters to be considered for its functioning. [7M]
8. (a) Illustrate how efficient integration between bluetooth WPANs and IEEE 802.11 WLANs is done. [7M]
- (b) What are the different security levels that can be defined for devices and services offered by Bluetooth. [7M]

UNIT – V

9. (a) Explain all the power saving features of IEEE 802.15.4. Also, explain the situations in which features could be useful. [7M]
- (b) Differentiate between ZigBee and Bluetooth. Explain the architecture of Zigbee technology with Zigbee components and network topology. [7M]
10. (a) Write a short note on Physical Layer w.r.t IEEE 802.15.4 [7M]
- (b) Explain LR-WPAN device architecture with suitable diagram. [7M]

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