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Question Paper Code : 51197

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth/Eighth Semester

Electronics and Communication Engineering

EC 1016 — WIRELESS NETWORKS

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Which transmission technique among DFE, sectored antenna, MCM, DSSS and FHSS does provide the highest data rate? Which one does consume the minimum power?
2. In an OFDM modem with 48 channels, each channel uses 16-QAM modulation. If the overall transmission rate is 10 Mbps. What is the symbol transmission rate per channel?
3. Mention the most predominant forms of interference in cellular telephone system.
4. Define cell splitting.
5. Write the frame hierarchy in GSM.
6. How many physical channels are available in each IS-95 carrier? What types of coding separates these channels from one another?
7. What is the difference between a probe and a beacon signal in 802.11?
8. Mention the major differences between HIPERLAN-1 and HIPERLAN-2.
9. Handoff decisions in wireless network are performed using Received Signal Strength measurements. Name the forward channel in IS-95 that is used for this purpose.
10. Compare the channel access mechanism of HIPERLAN-1 with HIPERLAN-2.

PART B.— (5 × 16 = 80 marks)

11. (a) The IS-136 digital cellular replaces the AMPS analog cellular. The modulation technique for the IS-136 is $\pi/4$ -QPSK
- (i) What is the minimum required average SNR for the IS-136 modems if the minimum acceptable average error rate is 10^{-3} and the channel is assumed to be flat Rayleigh fading? (5)
 - (ii) What is the threshold SNR if the acceptable error is 10^{-3} ? (5)
 - (iii) With the average SNR of part
 - (i) and the threshold SNR of part
 - (ii) what is the outage rate of the system? (6)

Or

- (b) Discuss the methods by which data services get integrated with voice-oriented Network. (16)
12. (a) (i) Describe the architecture of cellular networks. (8)
- (ii) Explain the use of directional antennas in cell sectoring technique. (8)

Or

- (b) (i) Describe the reuse partitioning mechanism of a cluster with seven cells. (8)
- (ii) Explain how channel allocation and capacity expansion are carried out in cellular networks. (8)
13. (a) Explain SMS and GPRS. (6+10)

Or

- (b) With a neat sketch, explain the architecture of CDMA networks. (16)
14. (a) (i) Explain the reference model and protocol entities of Wireless ATM network. (8)
- (ii) Perform a detailed comparison on 802.11 and HIPERLAN-2. (8)

Or

- (b) (i) Explain MAC layer responsibilities in IEEE 802.11 WLANs. (8)
- (ii) What is the symbol transmission rate in the IEEE 802.11b? How many complex QPSK symbols are used in one coded symbol? How many bits are mapped into one transmitted symbol? What is the redundancy of the coded symbols? (8)

15. (a) What are the primary goals of the WAP forum efforts and how are they reflected in WAP protocol architecture? (16)

Or

- (b) Explain the following:
- (i) Technologies for wireless geolocation. (8)
 - (ii) Geolocation standards for E.911 service. (8)
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