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Question Paper Code : X 67554

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Sixth/Eighth Semester
Electronics and Communication Engineering
EC 1016 – WIRELESS NETWORKS
(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. For a given Bandwidth, which transmission technique among DFE, sectored antenna, MCM, DSSS and FHSS provides the highest data rate and which one consumes 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. A mobile is located 6 km away from a base station and uses a vertical $\frac{\lambda}{4}$ mono pole antenna with a gain of 2.5 db to receive cellular radio signals. The E field at 1.5 km from the transmitter is measured to be 10^{-3} V/m. The carrier frequency used for this system is 900 MHz. Find the length and effective aperture of the receiving antenna.
5. Write the frame hierarchy in GSM.
6. How many physical channels are available in each IS-95 carrier ? What type of coding separates these channels from one another ?
7. What is the difference between a probe and a beacon signal in 802.11 ?
8. Differentiate 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) Describe in detail the various transmission techniques applied in wireless networks.
(OR)
- b) Explain the integration of voice in the Data – oriented networks by presenting the details of QOS, Service integration and IP telephony.
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) i) In wireless WAN, explain architecture and mechanism to support mobile environment. (8)
ii) Explain the concept of short messaging service in GPRS. (8)
(OR)
- b) Discuss in detail forward and reverse channel in WCDMA. Mention its merits, demerits and application.
14. a) i) Explain the reference model and protocol entitles 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) Make a detailed answer on the architecture and technologies related to wireless geo-location system.
(OR)
- b) Make a detailed answer on the architecture and protocol stack of Bluetooth.
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