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Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(ECE) (E-III) (Sem.–3)

WIRELESS & MOBILE COMMUNICATION

Subject Code : EC-520

Paper ID : [E0577]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

Q1 a. Explain the function of each layer of TCP/IP reference model. What is the basic difference between TCP/IP and OSI reference model?

b. Differentiate between guided media and unguided media. What are some major advantages and disadvantages of microwave transmission?

Q2 a. Compare following encoding techniques : Unipolar, RZ, Manchester and Differential Manchester coding schemes. Also encode following data stream with these line coding schemes: 010101100

b. Consider a free space propagation system with a receiver located at 20 km from a 100 W transmitter. If carrier frequency is 900 MHz, *Transmitter antenna gain*, G_t = 1, *Receiver antenna gain* = G_r = 2, then determine the power and magnitude of the E-field at the receiver antenna.

Q3 a. Explain in details the frame format of IEEE 802.11. Discuss the security and power management of IEEE 802.11 standard for WLAN.

b. Discuss the exponential back-off algorithm used in a WLAN.

Q4 What is direct sequence spread spectrum? What are the basic differences between the DSSS and FHSS systems? What is the relationship between the bitrate of a signal before and after it has been encoded using DSSS?

Q5 CDMA2000 evolves from *IS95* technology. CDMA2000 is more efficient and robust than its predecessor (*IS95*). Justify this statement and compare *IS95* and CDMA2000 based on their key physical layer parameters, architecture, channel structure and configuration.

Q6 a. With the help of proper block diagram, explain the architecture of GSM in detail.

b. Explain GSM frame format in detail. Why do you need an equalizer in the GSM?

Q7 a. Why is cell splitting needed? Define 4:1 and 3:1 cell splitting. Explain segmentation in a cellular system. Why is it required?

b. Define the three services available in the GSM. Define the role of an HLR in the WWAN architecture.

Q8 Explain the process of speech coding in GSM. What is an AMR codec? How is capacity improvement in a GSM system achieved with the AMR codec compared to the FER codec?