

## **B.E. Semester VII EC**

### **Wireless Communication**

#### **QUESTION BANK (GUJARAT UNIVERSITY)**

1. Write short note on IEEE 802.11
2. Write short note on Bluetooth.
3. What is the delay spread bound  $T_{max}$  of a 220 MHz public land mobile radio (PLMR) system if  $P_t=1$  watt and  $P_r \min= - 90$  dBm? How much is  $T_{max}$  if the sensitivity of the receiver is improved to  $P_r \min= - 100$  dBm?
4. Discuss the Okumura's prediction method with necessary equations.
5. What is the difference between cordless and cellular systems?
6. Calculate the mean path loss at 1800 MHz frequency in a large urban environment at distances of 1,2,3,4 and 5 km from BS using the Hata-Okumura and COST 231 models. Assume BS antenna height is 150 m and mobile antenna height = 1m. Assume any other suitable data.
7. Describe the factors influencing the small-scale fading in detail.
8. State the modulation method(s) used by major first generation analog systems.
9. Mention the problems with a DECT network regarding compatibility with other networks.
10. How many carriers are supported by PDC system?
11. Write short note on Wi-Fi.
12. Write short note on Wi-Max.
13. Write short note on Medium access control (MAC).
14. Write short note on multiple access with collision avoidance.
15. Explain the difference between cellular and ad-hoc wireless networks.
16. Describe the DSR routing protocol.
17. Describe the AODV routing protocol.
18. What is hidden terminal problem and exposed terminal problem in wireless ad-hoc network?
19. Classify the small-scale fading & explain the frequency selective fading.
20. Write short note on wireless sensor networks.
21. Write short note on "Mobile Object Transfer Protocol".
22. Write short note on mobile IP.
23. Explain ICMP (Internet Control Message Protocol).
24. Classify wideband cellular systems.
25. What is coherence bandwidth?
26. Consider a transmitter which radiates a sinusoidal carrier frequency of 1850 MHz. For a vehicle moving 60mph, compute the received carrier frequency if the mobile is moving (a) directly toward the transmitter, (b) directly away from the transmitter, and (c) in a direction which is perpendicular to the direction of arrival of the transmitted signal.
27. What is Multipath Fading?
28. What is Doppler Frequency for 1850 MHz TX Frequency and Mobile is moving at 60 miles/hour?
29. Explain two ray Rayleigh fading method. For a Rayleigh fading signal compute the positive going level crossing rate for  $p=1$  when the maximum Doppler frequency is 20 Hz. What is the maximum velocity of the mobile for this Doppler frequency if the carrier frequency is 900 MHz?
30. A Flat Rayleigh fading signal at 6GHz is received by a mobile traveling at 80 km/hr
  - (a) Determine the number of positive going zero crossing about the rms value that occurs over a 5 s interval.
  - (b) Determine the average duration of fade below the rms level.
  - (c) Determine the average duration of fade at a level of 20 dB below the rms value.
31. Explain delay spread?
32. Explain two-ray ground reflection model.
33. Explain in details the third generation (3G) W-CDMA (UMTS).
34. Explain in details the third generation 3G cdma2000.
35. Explain in details the third generation 3G TD – SCDMA.
36. Describe Multiple Access Collision Avoidance for Wireless LANs (MACAW)

37. Write short note on “Wireless Local Loop”.
38. Compare Flat fading and frequency selective fading.
39. Compare slow fading and fast fading.
40. Classify various wireless communication systems.