B.E.Sem VIII EC
Mobile Communication

QUESTION BANK (GUJARAT UNIVERSITY)

All questions carry equal marks (10 marks)

1. Compare GMSK and FQPSK modulated wireless systems in terms of capacity and throughput.
2. Describe briefly about "Cell Splitting".
3. Describe briefly about "Microcell zone concept".
4. Describe the following GSM subsystem entities.
   a. MSC b. HLR c. VLR d. OMC
5. What is the data rate over radio channel in GSM? How many channels are there per carrier?
6. Which are second generations US cellular standards?
7. What is the difference between cordless and cellular systems?
8. Explain "A" interface for GSM system.
9. Prove that the co-channel interference is a function of D/R, where D=radius of large cell and R=center to vertex distance in Hexagonal cell geometry.
10. Compare spectral efficiency as a function of cell radius for omni directional, 120-degree sector and 60-degree sector.
11. Explain the procedure of calculating spectral efficiency for a given cellular system with no. of channels, total bandwidth and average call holding time.
12. Describe the GSM subsystem entities MS & BSS.
13. Draw a figure showing signaling protocols used between GSM entities.
14. Write a short note on "GSM data Services".
15. Write a short note on "GSM logical channels".
16. State the modulation method(s) used by major first generation analog systems.
17. State the speech coding techniques used by major 2G cellular/cordless systems.
18. Mention the problems with a DECT network regarding compatibility with other networks.
19. What is the channel bandwidth in IS-95 system?
20. Briefly explain speech codec attributes.
21. Draw a figure illustrating GSM logical channels.
22. Compare synchronization and access bursts in GSM.
23. What is mobile identification procedure?
24. Classify wideband cellular systems.
25. Give differences between intra MSC handover and inter MSC handover.
26. Which services are supported by PDC?
27. Why GMSK Modulation is used in GSM?
28. What is FDMA & TDMA?
29. Which is basic concept of Mobile Telephony?
30. Describe the following terms:
   (I) Cell **(11)** Cluster **(III)** Channel Capacity
   (IV) RSSI **(V)** MAHO **(VI)** Dwell Time
31. Explain regarding Co-channel interference & channel capacity problems. 8
   obtain Mathematical relationship ranging from Signal to Interference, S/I ratio and
   Q co-channel reuse ratio.
32. Assuming 6 co-channel interfering cells, obtain S/I for path loss coefficients of
   n =3 and n = **4.** Consider cluster size N = **7.** In which case 15 dB requirements is
   met? What needs to be changed to meet the identical condition in 2nd case?
33. Discuss the technique of generating QPSK signal with a neat diagram. What is the
   advantage compared to BPSK?
34. Explain GSM speech processing.
35. What is MSK? Why is it used? Discuss advantages of GMSK.
36. Draw & discuss GSM Network Architecture.
37. What are kepler's three laws of planetary motion? Give the mathematical formulation of kepler's third law of planetary motion.

38. Which are the different types of orbits used for satellite Communication? Explain in detail.
39. An earth station situated in the Bangalore needs to calculate the Look angles to a geostationary satellite in the Indian Ocean operated at INSAT. The details of the earth station site and the satellite are as follows:

    Earth station latitude and Longitude are 52.0 degree N and 0 degree
    Satellite longitude (sub-satellite point) is 66. 0 degree E
40. What is uplink? Draw and Explain Uplink block-diagram. Also explain all the steps to be followed for Uplink power budget preparation.