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Total Pages : 3

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**May 2023**

**B.Tech. (ECE) VI SEMESTER**

**Mobile Communication Networks (ECEL-608)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) Define frequency reuse ratio. (1.5)
- (b) What is frequency selective fading? (1.5)
- (c) What do you mean by foot print and dwell time? (1.5)
- (d) Why hexagonal cells are preferred over other shapes in cellular system? (1.5)
- (e) What is doppler shift? ; (1.5)
- (f) Why are smart antennas required? (1.5)
- (g) Define outage capacity. (1.5)

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- (h) Find the far field distance for an antenna with maximum dimension of 2m and operating frequency of 1GHZ. (1.5)
- (i) What is MIMO system? (1.5)
- (j) State the difference between MSK and GMSK. (1.5)

### PART-B

2. (a) Explain about co-channel interference and adjacent channel interference. Describe the techniques to avoid interference. (8)
- (b) Draw and explain cellular network architecture. Compare 2G and 3G cellular standards. (7)
3. (a) Explain the fading effects due to multipath time delays spread and fading effects due to doppler spread. (8)
- (b) Explain free space propagation model and explain the parameters of mobile multipath channel. (7)
4. (a) Explain the working principle of PIFA Antenna. What are its advantages and applications? (8)
- (b) Explain BPSK and DPSK and compare their performance. (7)
5. (a) Why is Power Control important in CDMA? (7)
- (b) Explain the schemes FDMA and TDMA with examples. (8)

6. (a) Describe effect of Antenna height in near and long-distance mobile propagation. (8)
- (b) Explain RAKE receiver with related sketch. (7)
7. (a) Draw IS-95 architecture. State its any two specifications. (8)
- (b) What is diversity?. Explain space diversity antennas with neat diagrams. (7)