

5. (a) What are the requirements and antenna technology used for Base Station antenna design process ? 7.5
- (b) Is a directional antenna useful for mobile communication ? why ? 7.5
6. (a) Which factors are adopted to determine the performance of algorithm for adaptive equalization ? Explain. 7.5
- (b) Discuss the performance of a RAKE receiver with a neat diagram. 7.5
7. (a) Draw and explain the GPRS architecture in detail. 7.5
- (b) Draw and explain GSM architecture with placement of BTS, BSC and MSC. 7.5

Roll No.

Total Pages : 04

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B.Tech (ECE) (Sixth Semester)

Mobile Communication Networks (ECEL-608)

Time : 3 Hours]

[Maximum Marks : 75

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

Part A

1. (a) What is dynamic channel assignment ? 1.5
- (b) What do you mean by propagation model ? 1.5
- (c) Why is power control important in CDMA ? 1.5
- (d) What is Coherence Bandwidth ? 1.5
- (e) What is the basic difference between 1G and 2G Technology ? 1.5

- (f) Why GMSK is preferred for multiuser, cellular communication ? 1.5
- (g) What is diversity ? 1.5
- (h) What do you mean by symbol error rate and bit error rate ? 1.5
- (i) What do you mean by fast fading and slow fading ? 1.5
- (j) Why is PIFA Antenna used ? 1.5

Part B

2. (a) Explain the concept of Frequency Reuse for Cellular Systems. 7.5
For a mobile system of cluster size is 7, determine the frequency reuse distance if cell radius is 5 km. Repeat the calculation for a cluster size of 12.
- (b) What do you mean by Handoff ? How can we make handoff fast ? Explain with all possibilities. 7.5
3. (a) Explain the scattering process with radar cross section model. 10

- (b) 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 : 5
- (i) Directly towards the transmitter
- (ii) Directly away from the transmitter.
- In a direction which is perpendicular to the direction of arrival of the transmitted signal.

4. (a) What are the various accessing techniques used in mobile networks ? Explain. 10
- (b) If GSM uses a frame structure where each frame consists of eight time slots, and each time slots contains 300 bits, and data is transmitted at 600 kbps in the channel. 5
- Find :
- (i) Time duration of a bit
- (ii) Time duration of a slot
- (iii) Time duration of a frame
- (iv) How long must a user occupying a single time slot wait between two successive transmissions ?