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Roll No. ....

**EC-602**

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**B. E. (Sixth Semester) EXAMINATION, June, 2012**

**(Electronics & Communication Engg. Branch)**

**CELLULAR MOBILE COMMUNICATION**

**(EC – 602)**

*Time : Three Hours*

*Maximum Marks : 100*

*Minimum Pass Marks : 35*

**Note :** Attempt *one* question from each Unit. All questions carry equal marks.

**Unit – I**

1. (a) Explain the operational limitations of conventional mobile telephone systems.
- (b) What is the propagation attenuation ? Derive the expression for received carrier power :

$$C = 10 \log \alpha - 10 \gamma \log R$$

where  $\alpha$  is constant,  $\gamma$  is propagation path loss slope and R is distance between transmitter and receiver in real mobile radio environment.

*Or*

2. (a) What is co-channel interference ? And, how it can be minimized.
- (b) Briefly describe the issues affecting choice of antennas, switching equipment and data links.

**P. T. O.**

**Unit – II**

3. (a) Explain the design of an omnidirectional antenna system in the worst case for  $K = 7$ ,  $K = 9$  and  $K = 12$  cell patterns.
- (b) What will be the effects on co-channel interference if the antenna height is lowering on a high hill and in a valley ?

*Or*

4. (a) What is the Umbrella-Pattern Effect ? How it reduces the co-channel and long distance interference ?
- (b) Explain the long distance Interference over water path and over land path.

**Unit – III**

5. (a) Discuss the Land to mobile transmission over water.
- (b) Describe the Lee's point-to-point model and write their merit.

*Or*

6. (a) Draw equivalent circuit of a transmitting and receiving antenna and explain in terms of pointing vector, receiving and transmitting power.
- (b) Explain the gain and pattern relationship of an antenna.

**Unit – IV**

7. (a) Explain the following :
- (i) Adjacent-channel assignment.
  - (ii) Channel sharing and borrowing.
- (b) What is the Sectorization in Fixed Channel assignment ? Compare nonsectorized cells and sectorized cells.

*Or*

8. (a) Explain the following :
- (i) Cell-site handoff
  - (ii) Intersystem handoff
- (b) What do you mean by dropped call rate ? Give the relationship among capacity, voice quality, and dropped call rate.

**Unit – V**

9. (a) Draw the GSM architecture and explain each subsystem.
- (b) How to transmit speech and data in GSM.

*Or*

10. (a) Explain the output power limits and power control in CDMA system.
- (b) Explain the following :
- (i) Time-division duplexing (TDD).
  - (ii) Mobile integrated radio system (MIRS).