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EC–602

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 α is constant, γ 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.

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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).