c) Explain the principle and working of TDD systems.

d) Draw and explain the architecture of GSM.

OR

Explain how call processing and handoff procedures in CDMA systems.

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Roll No

EC-602

B.E. VI Semester

Examination, December 2016

Cellular Mobile Communication

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except Numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Why does the mobile phone cell the basic geographic unit of cellular system have a hexagonal shape?

b) What are the basic units of a cellular system?

c) What are Co-channel cells? What is co-channel interference?

d) Derive the expression for the desired C/I in an Omni-directional antenna system for a cluster size N= 7.

OR

State the different techniques used for improving coverage and capacity in cellular systems.

Unit - II

3. a) Determine the terms antenna radiation pattern, antenna gain, antenna polarization and front to back ratio.

   b) What are the advantages of using umbrella-pattern antennas at the cell sites?

   c) What are the disadvantages of long-distance propagation? How can it be minimized?

   d) Describe the parameters responsible for signal loss due to foliage. How does foliage loss vary with foliage density, path lengths and frequency of transmission?

OR

Describe the various criteria that decides placement of cell site antennas and mobile antennas.

Unit - III

3. a) What are the advantages and disadvantages of cell sectoring?

   b) What is antenna down tilting schemes? What are their types?

   c) What are the sources of adjacent channel interference? How can it be reduced?

   d) Compute the worst case C/I value at the mobile receiver located at the boundary of its serving cell if it is under the influence of interfering signals from two nearest co-channel interfering cells in a cellular system. The system is designed with 3-sector directional antenna cellular system with a reuse pattern of 4.

OR

What is near-end-far-end interference? What is cross talk?

Unit - IV

4. a) Under what circumstances, is static channel assignment normally used?

   b) Differentiate between intercell handoff and intracell handoff.

   c) What is the necessity of channel assignment in cellular mobile communication?

   d) What is Channel Borrowing? What are its advantages and disadvantages?

OR

State the conditions when handoff is needed. Define the two level handoff algorithm.

Unit - V

5. a) Enlist the services offered by GSM.

   b) What are the different types of GSM channels?