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# EC - 602

## B.E. VI Semester

Examination, June 2016

## Cellular Mobile Communication

*Time : Three Hours*

*Maximum Marks : 70*



*Note:* i) Answer 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.

1. a) Write the advantages of cellular system.
   b) What are various mechanisms for capacity increase in cellular system?
   c) Explain the concept of frequency reuse.
   d) Describe the basic cellular system architecture and call procedure with suitable diagram.

   OR

   Give details about the hand-off mechanism in cellular system.

2. a) Define various parameters of mobile antenna.
   b) Define various effect of shading in cellular mobile communication.
   c) Explain sum and difference patterns.
   d) Determine the expression for the received signal power in case of (i) Line of sight model and (ii) Two ray model.

   OR

   Elaborate free space and multipath propagation concept using suitable example.





3. a) What is umbrella pattern effect?
   b) Explain near-end-far-end interference.
   c) Compare co-channel and adjacent channel interference.
   d) For given path loss exponent (a) n = 4 and (b) n = 3, find the frequency reuse factor and the cluster size that should be used for maximum capacity. The signal to interference ratio of 15 dB is minimum required for satisfactory forward channel performance of a cellular system. There are six co-channel cells in the first tier and all of them are at same distance from the mobile. Use suitable approximations.

   OR

   Given a cellular system with 416 radio channels available for handling traffic. Assume that 21 of there channels are designated as control channels. Let the average channel holding time of call be 3 minutes, the blocking probability during busy hours be 2%, and frequency reuse factor be 9.
   i) Determine the number of calls per cell per hour.
   ii) Determine the signal to co-channel interference ratio, S/I in dB.

4. a) What is dropped call rate formula?
   b) Explain mobile assisted handoff.
   c) What is delaying and queuing of handoff?
   d) What do you understand by frequency management in cellular system?

   OR

   Describe channel assignment in cellular system.

5. a) What is cordless phone?
   b) Explain TDD systems.
   c) Define PDC, PCN and PCS.
   d) Explain the architecture of GSM. Briefly describe the services offered by GSM system.

   OR

   What do you mean by CDMA system? Demonstrate the working of CDMA systems with the help of suitable example.

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