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Code No: N0422/R07 **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March 2013
CELLULAR AND MOBILE COMMUNICATIONS
(Common to Electronics & Communications Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) How the frequency spectrum is utilized efficiently in mobile system? Explain in detail with the suitable example.
   (b) What is the difference between frequency selective fading & flat fading?[10+6]
2. (a) Draw & Explain the six effective interfering cells of cell 1.
   (b) Describe the main concept of the handoff mechanism. [8+8]
3. (a) Discuss the effect of near-end-far-end interference of mobile unit.
   (b) Write in detail about different combining techniques used in mobile communication. [8+8]
4. Discuss in detail point-to-point path loss prediction model. Discuss the factors that effect the accuracy of prediction. [16]
5. (a) Write the equation of general pattern for a 2N elements array equi-spaced by a separation 'd'. [4+6+6]
   (b) Differentiate between Roof-mounted and glass-mounted antennas.
   (c) What are the advantage of using umbrella pattern antennas at cell site?
6. (a) Differentiate between the Access channel and Paging channel.
   (b) Explain how to avoid interference between two system while assigning setup channels?
   (c) Why the cochannel interference is avoided easily in sectorization than in cell splitting? [6+4+6]
7. (a) Explain how to calculate the number of handoffs per call?
   (b) What are the circumstances where handoffs are necessary but cannot be made?
   (c) Explain how a handoff is initiated? [6+6+4]
8. (a) Why HLR and VLR are required in Network and Switching subsystem? Differentiate them.
   (b) What the different types of logic channels? How these are differ from physical channels? [8+8]

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Code No: N0422/R07 **Set No. 2**

IV B.Tech I Semester Supplementary Examinations, March 2013
CELLULAR AND MOBILE COMMUNICATIONS
(Common to Electronics & Communications Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the trunking efficiency.
   (b) Describe the model of Mobile transmission medium & the fading characteristics. [8+8]
2. (a) Give the general formula to find the value of 'K' and find out the frequency reuse distance with available 'K' value.
   (b) What is the concept of frequency reuse and explain how this is useful in increasing the no. of. channels. [6+10]
3. (a) What is Near-end-far-end interference ratio and explain its effect.
   (b) Write notes on channel combiners. [8+8]
4. (a) From the free space propagation model derive the equation for received power.
   (b) Discuss Lee model of point to point propagation. [6+10]
5. (a) Write the equation of general pattern for a 2N elements array equi-spaced by a separation 'd'. [4+6+6]
   (b) Differentiate between Roof-mounted and glass-mounted antennas.
   (c) What are the advantage of using umbrella pattern antennas at cell site?
6. (a) Differentiate between the Access channel and Paging channel.
   (b) Explain how to avoid interference between two system while assigning setup channels?
   (c) Why the cochannel interference is avoided easily in sectorization than in cell splitting? [6+4+6]
7. (a) Why the handoffs are needed in cell sites?
   (b) What are the advantages of delayed handoffs?
   (c) What ate the reasons for perception of dropped call rate by the subscribers can be higher? [6+6+4]
8. (a) Explain how NSS manages the communication between GSM users and other telecommunication users.
   (b) What the different types of physical channels? How these are differ from logic channels? [8+8]

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Code No: N0422/R07 **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, March 2013
CELLULAR AND MOBILE COMMUNICATIONS
(Common to Electronics & Communications Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Draw the block diagram of a basic cellular mobile communication system and describe the functions of each unit.
   (b) What are the spectrum efficiency considerations of an ideal mobile telephone system? [10+6]
2. (a) Explain the major elements of cellular mobile radio system.
   (b) Explain the frequency reuse schemes.
   (c) Describe the blocking probability of cellular system. [6+6+4]
3. (a) Explain, how the co-channel interference is measured at the mobile unit & cellsite.
   (b) Illustrate the real time co-channel interference measurement at the mobile radio transceiver. [8+8]
4. (a) Explain the effects of cellsite antenna height on cell coverage.
   (b) Derive the expression for power received in ground reflected model. [10+6]
5. (a) Write the equation of general pattern for a 2N elements array equi-spaced by a separation 'd'. [4+6+6]
   (b) Differentiate between Roof-mounted and glass-mounted antennas.
   (c) What are the advantage of using umbrella pattern antennas at cell site?
6. (a) Explain how a paging channels are used for the land originating calls?
   (b) How a Reuse-partition scheme reduces the number of cell sites? Explain it with suitable examples. [8+8]
7. (a) What type of handoff is used when a call initiated in one cellular system and enter another system before terminating? Explain how it works.
   (b) Explain how the coverage is increased for a noise-limited system by the parameters of the system. [8+8]
8. (a) Why Analog cellular systems are limited to use FDMA only? What type of multiple access used in Digital cellular systems?
   (b) Why constant time delay is required between uplink and down link?
   (c) Explain how a time slot number is organized? [6+6+4]

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Code No: N0422/R07 **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, March 2013
CELLULAR AND MOBILE COMMUNICATIONS
(Common to Electronics & Communications Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss in detail about mean opinion score of voice quality.
   (b) What is the significance of propagation attentuation in mobile radio environment. [8+8]
2. Discuss in detail the consideration of components of cellular systems. [16]
3. (a) Distinguish between signal and co-channel interference received by the mobile unit and cell site.
   (b) Explain the importance of the antenna height in reduction of co-channel interference. [8+8]
4. Explain the path loss prediction over hilly terrain with suitable diagrams. [16]
5. (a) Draw the symmetrical difference pattern and compare it with symmetrical sum pattern.
   (b) Draw the cell site antenna for omni cells for 45 and 90 channels and explain them. [8+8]
6. (a) What is self location scheme? Why it is used in cellular system?
   (b) Explain how a underlay-overlay cells are arranged in sectorized cells?
   (c) Explain how the channels are assigned in a directional antenna cell system? [4+6+6]
7. (a) Explain how to calculate the number of handoffs per call?
   (b) What are the circumstances where handoffs are necessary but cannot be made?
   (c) Explain how a handoff is initiated? [6+6+4]
8. (a) What are the different switching functions included in Network and Switching subsystem of GSM? Explain them briefly.
   (b) What are the different Authentication parameters for base station validation in CDMA Digital Cellular Systems and explain them? [8+8]

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