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

IV B.Tech. I Semester Supplementary Examinations, February/March 2012

CELLULAR AND MOBILE COMMUNICATIONS

(Common to Electronics & Communication 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 working of a cellular mobile system. [8]
   b) Discuss Analog cellular system. [8]

2. a) What is meant by Frequency reuse? Explain the available frequency reuse schemes. [8]
   b) Explain the Two methods of cell splitting. [8]

3. a) Define C C I and explain how it is measured at the mobile unit. [8]
   b) Discuss the effects of antenna parameters on the cell interferences. [8]

4. a) Discuss the standard deviations in obtaining mobile point to point (Lee Model) model. [8]
   b) If f_c = 900MHz, h_t = 40mt, h_r = 5 mt and d = 10km. Estimate the path loss medium size city. [8]

5. Explain the following [8+8]
   a) Roof Mounted Antennas
   b) Umbrella Pattern Antennas

6. Explain the following [8+8]
   a) Adjacement Channel assignment.
   b) Sectorization

7. a) Explain the following Hand offs
      i) Power difference Hand off
      ii) Cell site hand off [8]
   b) Explain Real time splitting with a neat figure. [8]

8. a) Distinguish between T D M A and C D M A. [8]
   b) Write short notes on 'G S M Channels' [8]

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

IV B.Tech. I Semester Supplementary Examinations, February/March 2012

CELLULAR AND MOBILE COMMUNICATIONS

(Common to Electronics & Communication Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

1. a) Discuss the limitations of conventional Mobile telephone systems. [8]
   b) Describe the mobile radio transmission medium and discuss the fading characteristics. [8]

2. a) Derive the desired carries to interference (C/I) ratio from a normal case in an Omini directional antenna systems. [8]
   b) What are the advantages of Cell splitting? Distinguish between permanent splitting and Dynamic splitting with a neat figures. [8]

3. a) Explain how Co-channel interference is measured in Real time Mobile trans receiver. [8]
   b) Discuss the effects of reduced power, reduced antenna height and beam tilt on coverage area and interference. [8]

4. a) Describe point to point transmission between two fixed stations over water or flat open land. [10]
   b) Discuss the merit of point to point model [6]

5. Explain the following [8+8]
   a) Mobile high gain antennas
   b) Directional Antennas for interference reduction use.

6. a) Give the Comparison of Omini cells and sectorized cells [8]
   b) Explain the channel sharing and Borrowing with neat figures. [8]

7. a) Explain the concept of delaying Hand off and Discuss the advantages of delayed Hand off. [8]
   b) Explain how δ and μ are improved due to the natural two site diversity in the hand off regain. [8]

8. a) Draw the GSM architecture and Explain. [8]
   b) Mention the salient features of C D M A. [8]

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

IV B.Tech. I Semester Supplementary Examinations, February/March 2012

CELLULAR AND MOBILE COMMUNICATIONS

(Common to Electronics & Communication Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

1. a) Explain the role of an Engineer in planning and operation of cellular networks. [8]
   b) Writer short notes on "Digital Cellular Systems". [8]

2. a) Draw the general view of cellular telecommunication system and explain its functioning of each unit. [8]
   b) Explain the concept of frequency reuse channels. [8]

3. a) Show that C/I for directional antenna in K = 7 cell pattern in 3 sector case is 24.5 dB. [8]
   b) Distinguish between next channel interference and neighboring channel interference. [8]

4. a) Derive the transfer function of the propagation channel in mobile – mobile land communication. [8]
   b) What is foliage loss? Discuss in detail. [8]

5. Explain the following [8+8]
   a) Omni directional antennas for coverage use.
   b) Horizontally oriented space diversity antennas

6. a) Distinguish between frequency management and channel assignment. [8]
   b) What do you understand by non fixed channel assignment? Describe the corresponding algorithms. [8]

7. Write short notes on
   a) "Qeuing of Hand offs" [8]
   b) Explain clearly how to calculate 'δ' and 'μ' for single cell. [8]

8. a) Draw the GSM architecture and discuss various interfaces used in GSM. [8]
   b) Discuss the important features of TDMA and CDMA. [8]

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

IV B.Tech. I Semester Supplementary Examinations, February/March 2012

CELLULAR AND MOBILE COMMUNICATIONS

(Common to Electronics & Communication Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

1. a) Discuss the performance criteria of cellular system. [8]
   b) Draw the basic cellular system and explain the functions of three parts. [8]

2. a) Explain the Co- channel interference reduction factor and derive the general formula for C/I. [8]
   b) Determine the frequency reuse distance for K = 4, 7, 12, 19. [8]

3. a) Explain the principle of operation of Diversity receiver. [8]
   b) Explain the different types of Non Co-channel interference. [8]

4. a) Discuss the various parameter of a cell system that can be adjusted to increase coverage. [10]
   b) Discuss the land to mobile radio propagation over water. [6]

5. a) What do you understand by Engineering antenna pattern? Explain the corresponding patterns. [8]
   b) Explain the concept of vertically oriented space diversity antennas. [8]

6. Explain the following in brief
   a) Paging channels
   b) Channel sharing and borrowing
   c) Under laid- overlaid cell arrangements [6+6+4]

7. a) Write short notes on "Mobile Assisted Handoff". [8]
   b) Prove that sectoring decreases trunking efficiency with an example. [8]

8. Explain the following [8+8]
   a) GSM Channels
   b) CDMA