Code No: **RT42041** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

CELLULAR MOBILE COMMUNICATION

(Electronics and Communications Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) Explain about Hexagonal shaped cells. [4]
   b) What is constant standard deviation? [3]
   c) What are the various high gain antennas? [4]
   d) What is the importance of frequency management chart? [4]
   e) Differentiate between the soft and hard handoff. [3]
   f) Explain the channels in GSM. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Describe the performance criteria of Cellular mobile systems. [8]
   b) Explain the concept of cell splitting. [8]

3. a) What are different types of non co-channel interference in a cellular system? [8]
   b) Explain the propagation of mobile signals over water and flat open area with general formula. [8]

4. a) Explain sum and difference patterns and their synthesis. [8]
   b) Describe the effects of cell site antenna heights on signal coverage. [8]

5. a) Explain about the phase difference between the direct and reflected paths of the signal. [8]
   b) Explain about set-up channels. [8]

6. a) What is Handoff? Explain Intersystem Handoff. [8]
   b) Discuss various vehicle locating methods. [8]

7. a) Discuss the frame structure for GSM. [8]
   b) Compare TDMA and CDMA techniques. [8]

Code No: **RT42041** **R13** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

CELLULAR MOBILE COMMUNICATION

(Electronics and Communications Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) Name the wireless access techniques used in 1G, 2G, 3G, and 4G. [4]
   b) What is adjacent channel interference? How it can be minimized? [3]
   c) Write short notes on space diversity antennas? [4]
   d) What is meant by voice channel? [4]
   e) Plot the signal strength for a two-level handoff scheme. [3]
   f) What are various protocols of GSM? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the operation of a Cellular system with neat diagram. [8]
   b) Derive the desired C/I from a normal case in a Omni directional Antenna System. [8]

3. a) Define co-channel interference. How is it measured at the mobile unit and cell site? [8]
   b) Explain signal reflections in flat and hilly terrain with neat diagram. [8]

4. a) Explain about umbrella pattern antennas used at cell sites. [8]
   b) Explain different types of antennas used for improving coverage and explain them. [8]

5. a) Explain numbering the channels and grouping into subsets. [8]
   b) Discuss about sectorization. [8]

6. a) What are different types of Handoffs? Explain how to implement them. [8]
   b) What is dropped call rate and explain their evaluation? [8]

7. a) Explain in detail about multiple access schemes. [8]
   b) List the GSM specifications. [8]

Code No: **RT42041** **R13** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

CELLULAR MOBILE COMMUNICATION

(Electronics and Communications Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) List the advantages of cell splitting. [4]
   b) What are various methods of reducing co-channel interference? [3]
   c) Write short notes on directional antennas. [4]
   d) Describe paging channel. [4]
   e) What are the different methods of delaying handoff? [3]
   f) What are the advantages of TDMA? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain uniqueness of mobile radio environment. [8]
   b) Discuss various techniques used to increase the capacity of a cellular system. [8]

3. a) Discuss the effects of antenna parameters on the cell interference. [8]
   b) Explain the effects due to human made structures. [8]

4. a) Explain about Omni directional antennas. [8]
   b) What are directional antennas and explain how they are useful in interference reduction. [8]

5. a) Explain about fixed channel assignment. [8]
   b) Explain about overlaid cells. [8]

6. a) What are the various handoff strategies based on algorithms of handoffs? [8]
   b) Write about microcells. [8]

7. a) Explain the principle of CDMA and write its advantages and disadvantages. [8]
   b) Describe the features and services GSM. [8]

Code No: **RT42041** **R13** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

CELLULAR MOBILE COMMUNICATION

(Electronics and Communications Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) State the different techniques used for improving coverage and capacity in cellular systems. [4]
   b) Briefly explain different methods used for reducing near-end and far-end interference? [3]
   c) Write short notes on Omni directional antennas. [4]
   d) Write short notes on channel sharing. [4]
   e) Define dropped call rate. [3]
   f) What is the efficiency of TDMA? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain various Analog and Digital Cellular systems. [8]
   b) Explain the various components of a Cellular system. [8]

3. a) How the interference is different from noise and explain different types of interference in a cellular system. [8]
   b) Describe the effect of antenna height in near and long distance mobile propagation. [8]

4. a) Explain the directional antennas used for the interference reduction. [8]
   b) Explain the concept of space diversity antennas with a neat diagram. [8]

5. a) Explain about channel assignment to cell sites and mobile units. [8]
   b) What is sectorization? Compare Omni cells and sectorized cells. [8]

6. a) What is Handoff and explain the handoff process in cellular systems. [8]
   b) Explain cell splitting and its effect on the performance of cellular systems. [8]

7. a) What is TDMA? Explain TDMA architecture with neat diagram. [8]
   b) Explain the architecture of GSM. [8]