

Code No: RT42041

**R13**

**Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

**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 the Trunking efficiency. [3]
- b) Explain the term co-channel interference. [3]
- c) Draw the cell site antenna for Omni cell for 45 & 90 channels, explain them. [4]
- d) What are the common principles of channel allocation schemes? [4]
- e) Give the general formula for finding dropped call rate in noise limited system and interference limited system. [4]
- f) What are the functions of OMC? [4]

**PART-B (3x16 = 48 Marks)**

2. a) What are the limitations of conventional mobile telephone system? [8]
- b) Discuss the mobile radio transmission medium. [8]
3. a) Distinguish between signal and co-channel interference received by the mobile unit and cell site. [8]
- b) Explain the affect of the human made structure on cell coverage. [8]
4. a) Explain different types of antennas used for coverage and interference reduction. [8]
- b) Write a note on spaced diversity antennas. [8]
5. a) Differentiate between fixed and non-fixed channel assignment in detail. [8]
- b) What are the advantages and draw backs of sectorization? [8]
6. a) What is the handoff? Explain any two types of handoffs. [8]
- b) What is meant by Mobile Assisted Handoff? Explain. [8]
7. a) Explain services and features of TDMA. [8]
- b) Explain architecture of GSM. [8]



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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) Define delay spread. [3]
- b) Why there is a constant standard deviation along the path loss curve? [4]
- c) What are the design issues of directional antennas for interference reduction? [4]
- d) Write a note on access channel. [4]
- e) Explain the delaying handoff. [4]
- f) What is the significance of multiple access schemes? Explain. [3]

**PART-B (3x16 = 48 Marks)**

2. a) Explain about basic cellular system with neat diagram. [8]
- b) With neat sketch, explain the concept of frequency reuse. [8]
3. a) Explain the real time co-channel interference measure in detail. [8]
- b) Why there is a constant standard deviation along a path-loss curve? [8]
4. a) Discuss the coverage of cell site using Omni directional antennas. [8]
- b) Explain about unique situations of cell site antennas. [8]
5. a) Write a note on channel assignment to travelling mobile unit. [8]
- b) Write the channel sharing scheme with a neat sketch. [8]
6. a) Why handoff is necessary for cellular systems? Determine the two types of handoffs based on signal strength and C/I ratio. [8]
- b) Explain about intersystem and intra system handoffs. [8]
7. a) Explain GSM architecture in detail. [8]
- b) Write a short note on TDMA structure frame length & frame offset. [8]



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(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) Write a note on coherence bandwidth. [2]
- b) Write different methods to reduce the co-channel interferences. [4]
- c) Discuss about broadband umbrella pattern antenna. [4]
- d) Write a note on paging channels. [4]
- e) What is the advantage of delayed handoffs? [4]
- f) Explain the term GSM and its functional blocks. [4]

**PART-B (3x16 = 48 Marks)**

2. a) List and explain the factors that influence the performance of cellular system. [8]
- b) Distinguish between the permanent splitting and dynamic splitting. [8]
3. a) Describe the effect of antenna parameters on the cell interferences. [8]
- b) Explain the point to point model. What are the advantages of point to point model over area to area model? [8]
4. a) What are the antennas used at cell site? Explain them. [8]
- b) Differentiate between roof-mounted and glass-mounted antennas. [8]
5. a) Explain the channel assignment to the cell sites based on the adjacent channels. [8]
- b) What are the different non fixed channel assignment algorithms? Briefly explain. [8]
6. a) Explain how a handoff is initiated. [8]
- b) Explain the concept of cell splitting technique. [8]
7. a) What are the services offered by GSM channels? [8]
- b) What is CDMA? Explain CDMA in detail. [8]



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**Set No. 4**

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**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) Briefly explain about cell shape and handoff. [3]
- b) Explain the signal reflections in hilly terrain. [4]
- c) Discuss about normal umbrella pattern antenna. [4]
- d) Write a note on Sectorization. [4]
- e) What is forced handoff? Explain. [4]
- f) What is the function of transcoder rate adoption unit in BSS? [3]

**PART-B (3x16 = 48 Marks)**

2. a) What are the parameters that define the uniqueness of mobile radio environment? Explain any two. [8]
- b) Present the concept of frequency reuse channels and frequency reuse distance. [8]
3. a) Compare the co-channel interference performance of a directional antenna system for  $k=7$  and  $k=4$ . [8]
- b) Explain briefly about long distance propagation. [8]
4. a) With neat sketch, explain how directional antennas achieve reduction in interference. [8]
- b) Explain about high-gain Omni-directional antennas. [8]
5. a) What is the function of frequency management? [8]
- b) Describe various non-fixed channels assignment algorithms. [8]
6. a) Explain two-hand-off-level algorithms. [8]
- b) Explain the microcell concept in cellular system. [8]
7. a) Explain briefly about GSM channels. [8]
- b) Explain in detail about multiple access schemes. [8]

