Code No: **R42041** **R10** **Set No. 1**

**IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015**

# CELLULAR AND MOBILE COMMUNICATIONS

**(Electronics and Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

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

1 a) Explain the basic cellular system with neat diagram. [8]

b) Discuss the propagation attenuation and severe fading in a mobile radio transmission medium. [7]

2 a) What is the concept of frequency reuse channels? [8]

b) Explain the general view of cellular telecommunications system. [7]

3 a) Define co-channel interference. How is it measured at the mobile unit and cell site? [8]

b) What is titling antenna? How can these antenna patterns reduce the co-channel interference? [7]

4 a) Explain the phase difference between a direct path and a ground-reflected path. [8]

b) Briefly explain the effects due to human made structures. [7]

5 a) How interference can be reduced by using the directional antennas at cell site. [8]

b) Write the short notes on spaced diversity antennas. [7]

6 a) Explain about set-up channels. [8]

b) Write the channel sharing algorithms. [7]

7 a) What are the different types of handoffs? Explain how to implement them. [8]

b) Plot the signal strength for a two level handoff scheme and explain it. [7]

8 a) Explain the terms GSM and GPRS. [8]

b) What is TDMA? Explain TDMA architecture with neat diagram. [7]

Code No: **R42041** **R10** **Set No. 2**

**IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015**

# CELLULAR AND MOBILE COMMUNICATIONS

**(Electronics and Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

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

1 a) Describe the performance criteria of mobile communication systems. [8]
b) Explain the operation of a cellular system in detail. [7]

2 a) Derive the expression for co-channel interference reduction factor. [8]
b) Why cell splitting and explain the cell splitting. [7]

3 a) Explain how co-channel interference is measured in real time mobile radio transceivers. [8]
b) Write a brief note on designing directional antenna system considering the effect of interference. [7]

4 a) Explain the propagation over water or flat open area. [8]
b) Determine the phase difference between direct path and reflected path. [7]

5 a) Explain sum and difference patterns and their synthesis. [8]
b) Explain about umbrella pattern antennas. [7]

6 a) Write notes on channel assignment to travelling mobile units. [8]
b) Describe various non-fixed channel assignment algorithms. [7]

7 a) Discuss the delayed handoffs and advantages. [8]
b) Discuss various vehicle locating methods at the cell site. [7]

8 a) Draw the TDMA frame structure and explain the significance of each slot. [8]
b) Write notes on reverse CDMA channel signals. [7]

Code No: **R42041** **R10** **Set No. 3**

**IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015**

# CELLULAR AND MOBILE COMMUNICATIONS

**(Electronics and Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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| | | | |
|---|---|---|---|
| 1 | a) | Explain the performance of cellular mobile system. | [8] |
| | b) | Write short notes on mobile fading characteristics. | [7] |
| 2 | a) | Distinguish between the permanent splitting and dynamic splitting. | [8] |
| | b) | Describe about desired C/I from a normal case in an omni-directional antenna system. | [7] |
| 3 | | What are the different types of non-co-channel interference? | [15] |
| 4 | | Explain the designing of the omni-directional antenna under the practical case conditions for k=7, k=12 and k=19 with all the suitable values and explaining each of them. | [15] |
| 5 | a) | Explain space diversity antennas used at cell site. | [8] |
| | b) | Describe the effects of cell site antenna heights and signal coverage cells. | [7] |
| 6 | a) | Explain how setup channels are act as control channels in celluar system. | [8] |
| | b) | Explain about channel assignment to travelling mobile units | [7] |
| 7 | a) | Explain the difference between soft handoff and hard handoff. | [8] |
| | b) | How do you find the values of $\delta$ and $\mu$ related to the call? | [7] |
| 8 | a) | Explain GSM channels and channel modes. | [8] |
| | b) | Explain in detail about multiple access scheme. | [7] |

Code No: **R42041** **R10** **Set No. 4**

**IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015**

**CELLULAR AND MOBILE COMMUNICATIONS**

**(Electronics and Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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| | | | |
|---|---|---|---|
| 1 | a) | Write some limitations of conventional mobile telephone systems. | [8] |
| | b) | Explain about the importance of the amplifier noise in the cellular systems. | [7] |
| 2 | a) | Explain the concept of frequency reuse channels and frequency reuse distance. | [8] |
| | b) | Derive the co-channel interference reduction factor. | [7] |
| 3 | a) | Explain the co-channel interference in cellular systems. | [8] |
| | b) | Explain the importance of the antenna height in reduction of co-channel interference. | [7] |
| 4 | a) | Explain signal reflections in flat and hilly terrain. | [8] |
| | b) | Discuss the "Lee Model" for point to point propagation. | [7] |
| 5 | | Explain in detail the unique situation of the antenna with neat diagram. | [15] |
| 6 | a) | Write notes on non-fixed channel assignment algorithms. | [8] |
| | b) | Explain in detail access channels and operational techniques | [7] |
| 7 | a) | With a neat diagram explain intersystem handoff. | [8] |
| | b) | Write about microcells. | [7] |
| 8 | a) | Why HLR and VLR are required in network and switching subsystem? Differentiate them. | [8] |
| | b) | Explain GSM services and features. | [7] |