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

**IV B.Tech II Semester Supplementary Examinations, July - 2014**

# 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) Briefly describe the concept of mobile radio environment. [7]

b) What are the advantages of digital cellular systems over analog cellular systems? [8]

2 a) What is hand off? Describe handoff mechanisms. [7]

b) Derive the desired C /I for a normal case in an Omni directional antenna systems. [8]

3 a) Explain the effect of antenna pattern on the interference at the base station and mobile unit. [7]

b) Explain the causes and measures for near to far end interference. [8]

4 a) Discuss in detail the propagation in near distance. [8]

b) Write short notes on Long distance propagation. [7]

5 a) Explain the procedure for obtaining sum and difference patterns for antenna systems of wireless communication? [8]

b) Write short notes on antenna height and its radiation pattern for mobile unit and its base station? [7]

6 a) Write short notes on Channel sharing and barrowing [8]

b) Fixed channel assignment [7]

7 a) Explain about the handoff and power control? [8]

b) Explain about the inter MSC handoff? [7]

8 a) Write short notes on Multiplexing and multiple access [7]

b) Explain in detail the concept of CDMA. [8]

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

**IV B.Tech II Semester Supplementary Examinations, July - 2014**

**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) What are the technical difficulties with present wireless communication systems? [8]

b) What is the significance of propagation, attenuation in mobile radio environment? [7]

2 a) How the system capacities are related with the co-channel interference, and derive the expression for signal to interference ratio. [8]

b) Explain in detail cell splitting concept with neat sketches? [7]

3 a) What are the different interferences in cellular systems and explain each with diagrams? [8]

b) Explain how a diversity receiver reduces the interference. [7]

4 a) Briefly explain the factors considered for prediction of path loss for a particular mobile radio environment. [8]

b) If $P_r$ = 12W $G_t$ =0db $G_r$ = 0db and $f_c$ = 900MHz. Find $P_t$ at a space distance of 1Km [7]

5 a) What do you mean by dead spot in the coverage area? [8]

b) Describe any two antennas that are suitable at the mobile unit with their important features and neat sketches. [7]

6 a) What type of messages is received to the setup channels when mobile unit monitors strongest signal strength? [8]

b) What are the advantages of reuse-partition scheme? [7]

7 a) Write short notes on fixed hand off [8]

b) Inter system handoff [7]

8 a) Draw the structure of GSM channel and what are the different types of channels present. [8]

b) Explain the different kinds of bursts used in GSM [7]

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

**IV B.Tech II Semester Supplementary Examinations, July - 2014**

# 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) What are the technical difficulties with present wireless communication systems? [8]
b) Distinguish between analog and digital cellular systems. [7]

2 a) Explain the concept of frequency reuse channels. [8]
b) Explain the maximum number of frequency channels per cell. [7]

3 a) Explain the importance of de multiplexer at the receiver to reduce non co-channel interference? [8]
b) Explain about typical cell site receiver? [7]

4 a) Determine maximum & minimum spectral frequency received from a stationary transmitter with a central frequency of 1950 MHz , Assume that the mobile receiver is travelling at speeds of:
i) 1KM ii) 5KM iii) 10KM iv) 100KM [8]
b) Describe all physical circumstances that relate to a stationary transmitter and a moving mobile receiver such that the Doppler shift at the receiver is equal to:
i) 0 Hz ii) $f_d$ max iii) $-f_d$ max iv) $f_d$ max/2 [7]

5 a) Differentiate between Roof-mounted and glass-mounted antennas. [8]
b) What are the advantages of using umbrella pattern antennas at cell site? [7]

6 a) Elaborate dynamic channel assignment and compare its advantages and disadvantages with the fixed channel assignment? [8]
b) Write short notes on paging and service channels? [7]

7 a) Explain different hand-off strategies and its importance in different situations? [8]
b) How to improve call drop rate? [7]

8 a) Draw the structure of GSM channel and what are the different types of channels present. [8]
b) Explain the different kinds of bursts used in GSM. [7]

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

**IV B.Tech II Semester Supplementary Examinations, July - 2014**

**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 criteria of a basic cellular mobile system. [8]

b) Explain about the mobile fading characteristics? [7]

2 What are the considerations of the components of a cellular system, Explain in detail. [15]

3 Discuss in details the various techniques to measure co channel interference, prove that the real time co-channel interference measurement is difficult to achieve. [15]

4 a) What are the different propagation models available for mobile communication? [8]

b) What are the factors influencing the fading of the signal and explain different types of fading. [7]

5 a) Draw the pattern for a directional antenna used for interference reduction and explain how it works. [8]

b) How the height and separation of an antenna are related in space diversity antennas used at cell site? Explain. [7]

6 Explain clearly different channel assignments and its importance in mobile communications? [15]

7 a) Write notes on power difference handoffs. [8]

b) Explain a two level handoff scheme with suitable example. [7]

8 a) Draw the internal structure of network and switching subsystem in GSM and explain the significance of each block. [8]

b) Write short notes on TDMA. [7]