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

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

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 analog and digital cellular systems and limitations of AMPS standard. [8]
b) Explain the phenomena of severe fading. [7]

2 a) Draw the frequency reuse pattern for a cluster size of N=3 and N=7. [7]
b) What are the various components in a cellular system? Explain briefly. [8]

3 a) Explain the concept of lowering the antenna height to decrease the co-channel interference. [7]
b) Prove that for hexagonal geometry the co-channel reuse ratio is given by $Q=\sqrt{3N}$ [8]

4 a) Why there is a constant standard deviation along a path-loss curve. [7]
b) Describe the various steps involved in finding antenna height gain in a mobile Environment. [8]

5 a) How interference can be reduced by using the directional antennas at the Cell site? [9]
b) Explain the following,
i) Roof mounted antennas
ii) Glass mounted antennas
iii) Mobile high gain antennas. [6]

6 a) Explain in detail access channels and operational techniques. [7]
b) Write the concept of the self location scheme at the mobile unit and the Autonomous registration. [8]

7 a) Why do the micro cellular structures have more number of handoffs per Second as compared to macro cellular structures? Explain. [7]
b) What is meant by a dropped call? Explain the factors that influence the dropped call rate. [8]

8 a) Write short notes on modes in GSM channels. [7]
b) Write about the signaling format and message structure in TDMA. [8]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

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 main advantages and disadvantages of various cellular structures?	[6]
	b)	Discuss the performance criteria of the basic cellular system?	[9]
2	a)	Explain the concept of frequency reuse channels.	[6]
	b)	Derive the C/I for normal case in an Omni directional antenna system.	[9]
3	a)	Explain how co-channel interference is measured in real time mobile radio transceiver.	[8]
	b)	Explain the importance of de-multiplexer at the receiver to reduce the non-co-channel interference.	[7]
4	a)	Discuss the "Lee model" for point to point propagation.	[10]
	b)	What is mean by foliage loss? Explain foliage loss.	[5]
5	a)	What do you understand by engineering antenna pattern? Explain the Corresponding pattern.	[8]
	b)	What are the different types of antennas are used as mobile antenna? Draw the structure of patch antenna and explain its operation.	[7]
6	a)	Write about fixed channel assignment schemes in detail.	[8]
	b)	Compare the average blocking in spatially uniform and non uniform Traffic distribution for FCA, BCA and FBCA.	[7]
7	a)	What is Intersystem handoff?	[7]
	b)	What are the various handoff strategies based on algorithms of handoff? Explain in detail.	[8]
8	a)	What are the services offered by GSM channels?	[6]
	b)	Write short notes on, i) TDMA structure ii) Frame length iii) Frame offset	[9]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

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 principle of operation of cellular mobile system and explain the Cellular concept with a neat diagram.	[10]
	b)	Why 800 MHz is for cellular mobile system?	[5]
2	a)	What is the purpose of cell sectoring? Explain how co-channel interference in a cellular system may be reduced?	[7]
	b)	Describe the frequency reuse concept in cellular communication system and derive the equation for the frequency reuse ratio.	[8]
3	a)	Discuss the diversity schemes for interference reductions at both mobile unit and cell site.	[7]
	b)	What is near-end-far-end interference ratio and explain its effects?	[8]
4	a)	Write about the phase difference between the direct path and the ground reflected path.	[9]
	b)	Explain the mobile signal propagation over water and flat area.	[6]
5	a)	Explain how umbrella pattern antennas are used as the cell site antennas.	[8]
	b)	Explain in detail about minimum separation of cell-site receiving antennas.	[7]
6	a)	Discuss the concept of frequency management concern to the numbering the channels and grouping into the subset.	[8]
	b)	Explain in detail the non-fixed channel assignment.	[7]
7	a)	What type of handoff is used when a call initiated in one cellular system Enters another system before terminating? Explain how it works.	[7]
	b)	What are the different vehicle locating methods? Explain in detail.	[8]
8	a)	Explain in detail about multiple access schemes.	[7]
	b)	Explain the architecture of NA-TDMA.	[8]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

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 limitations of conventional mobile telephone system and Describe the various generations of wireless mobile systems.	[7]
	b)	Explain about NMT and NTT Systems.	[8]
2	a)	Explain the frequency reuse distance in cellular radio system.	[7]
	b)	List the various techniques used to expand the capacity of a cellular system. Explain in detail.	[8]
3	a)	Define co-channel interference. How is it measured at the mobile unit and cell site?	[8]
	b)	Explain different methods to reduce the co-channel interferences.	[7]
4	a)	Derive the relation for the maximum coverage distance in mobile environment.	[8]
	b)	Describe the effect of antenna height in near and long distance mobile Propagation.	[7]
5	a)	Obtain the free space path loss from the transmitting end and the receiving end of the antenna. Derive the received power in dBm. How is the measured field strength converted into the receiver power?	[8]
	b)	Explain the concept of diversity antenna spacing in cell site with a simple diagram.	[7]
6	a)	Explain about the Underlay-Overlay Arrangement.	[8]
	b)	What do you understand by non-fixed channel assignment? Describe the corresponding algorithms.	[7]
7	a)	Write about forced handoff and delayed handoff mechanisms in detail.	[8]
	b)	What is the general formula of dropped call rate? Explain.	[7]
8	a)	Explain in detail about GSM architecture.	[10]
	b)	Explain about TDMA channels.	[5]