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

IV B.Tech II Semester Regular/Supplementary Examinations, April - 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 about mobile radio transmission medium in detail.	[8]
	b)	Explain about AMPS and digital cellular system.	[7]
2		What is frequency reuse and derive the equation for frequency reuse ratio?	[15]
3	a)	Describe the effects of antenna parameters on the cell interferers.	[7]
	b)	Explain how co-channel interference is measured in real time mobile radio trans-receivers.	[8]
4	a)	Write about long distance radio propagation.	[7]
	b)	Explain about point to point model and its merits.	[8]
5	a)	Derive free space path-loss formula for transmitting antenna.	[8]
	b)	Write about the synthesis of sum and difference patterns.	[7]
6	a)	What is sectorization? Compare omni cells and sectorized cells.	[7]
	b)	Discuss channel sharing and borrowing.	[8]
7	a)	Explain handoff based on signal strength and C/I ratio.	[8]
	b)	Discuss advantages of delayed handoffs.	[7]
8	a)	Explain the architecture of GSM.	[8]
	b)	Draw the TDMA frame structure and explain the significance of each slot.	[7]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April - 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) What are the characteristics of mobile radio channel fading discuss in detail? [8]

b) Write about performance criteria of cellular communication system. [7]

2 a) What is the need for frequency reuse? Prove that for a hexagonal geometry, the co-channel reuse ratio is given by $Q = \sqrt{3N}$, where $N=i^2+ij+j^2$. [7]

b) Derive the C/I in an omni-directional antenna system. [8]

3 a) What are the different antenna parameters? Write about each parameter. [7]

b) Discuss the need for co-channel interference models. [8]

4 How a radio signal will propagate over water and explain it for different scenarios. [15]

5 a) Write about space diversity antennas used at cell sites. [8]

b) What are directional antennas? Explain directional antennas for interference in detail. [7]

6 a) Write about channel assignment to travelling mobile units. [7]

b) Discuss about non fixed channel assignments. [8]

7 a) What is cell splitting and discuss about various cell splitting techniques? [8]

b) Explain about various vehicle locating methods. [7]

8 a) Write about the channel modes of GSM. [8]

b) What is the difference between TDMA and CDMA. [7]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April - 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 operation of mobile cellular system. [8]

b) Explain about i) Hexagonal shaped cells ii) Noise level in cellular frequency band. [7]

2 a) Draw the frequency reuse pattern for the cluster size N=7. [7]

b) Define cell splitting? How does cell splitting affect the system design? [8]

3 a) Explain various types of non co-channel interference. [7]

b) An antenna has D=4, R_{rad}=40 ohms, and R_{diss}=10 ohms. Find antenna efficiency and maximum power gain. [8]

4 a) Write about radio propagation in near-in distance. [7]

b) Explain about point-to-point model and its merits. [8]

5 a) Discuss in detail different types of umbrella pattern antenna. [8]

b) Write about the minimum separation of cell site receiving antenna. [7]

6 Describe the grouping of the voice, setup, and paging channels. [15]

7 a) Write about mobile assigned handoff. [7]

b) Discuss how dropped call rates are evaluated. [8]

8 Write short notes on

a) Diversity receiver [8]

b) Multiple access schemes [7]

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

IV B.Tech II Semester Regular/Supplementary Examinations, April - 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 in detail about AMPS and Digital cellular systems. [8]

b) Write about mobile radio transmission medium in detail. [7]

2 a) If the cluster size is four, the cluster is replicated seven times and each cell is allocated 30 channels. Find the total number of radio channels and the total number of duplex channels. [8]

b) Derive the C/I in an omnidirectional antenna system. [7]

3 a) Distinguish between CCI and non-CCI. [7]

b) Describe the effects of antenna parameters on the cell interferers. [8]

4 Explain the phase difference between directed and reflected paths with necessary equations. [15]

5 a) Explain in detail the importance of consideration of cell-site antennas. [8]

b) Write about the minimum separation of cell site receiving antenna. [7]

6 a) What is the difference between fixed channel assignment and non fixed channel assignment? [8]

b) Discuss the concept of overlaid cells. [7]

7 a) What is forced handoff? Explain different types of forced handoffs. [8]

b) Discuss in detail intersystem handoff. [7]

8 a) Explain the principle of CDMA with necessary diagrams. [8]

b) Explain the types of channels in GSM. [7]