Code: 20A04703c

R20

B.Tech IV Year I Semester (R20) Regular Examinations December/January 2024

CELLULAR & MOBILE COMMUNICATIONS

(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	What are the components in a cellular system?	2M
	(b)	Define frequency reuse ratio.	2M
	(c)	State the major factors causing propagation pathloss	2M
	(d)	Define the gain of an antenna and write the expression for it.	2M
	(e)	Explain in detail about the importance of cell-site antennas.	2M
	(f)	Mention the effect on coverage and interference of mobile link by decrease in transmitter power level	2M
	(g)	What are the advantages of cell sectorization over cell splitting?	2M
	(h)	What are the functions of frequency management?	2M
	(i)	What is a forced handoff?	2M
	(j)	What are the advantages of hand-off process?	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	(a)	Compare and contrast 1G, 2G, 3G and 4G cellular wireless systems.	5M
	(b)	Explain in detail about basic cellular mobile system.	5M
		OR	
3	(a)	Why do we divide the cell into various sectors? Explain briefly.	5M
	(b)	The 2G GSM has 125 channels in the uplink and 125 channels in the down link. Each channel has a bandwidth of 200 kHz. What is the total bandwidth occupied in both uplink and down link.	5M
4	(a)	List the expressions for path loss from a point to point prediction model in different conditions.	5M
	(b)	Explain the phase difference between a direct path and a ground-reflected path.	5M
		OR	
5	(a)	Describe the effects of cell site antenna heights and signal coverage cells.	5M
	(b)	Explain the principle and advantages of umbrella pattern antennas in cellular systems.	5M
6	(a)	Explain the various types of non-co-channel interferences in a cellular environment?	5M
	(b)	Explain about the co-channel interference reduction factor and derive the general formula for C/I.	5M
		OR	
7	(a)	Explain how co-channel interference is measured in real time mobile transreceiver.	5M
	(b)	Compare Frequency Diversity and Time Diversity Techniques.	5M

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8	(a)	Differentiate Frequency channel assignment and non-Frequency channel allocation in detail.	5M
	(b)	Discuss the concept of frequency management related to the numbering the channels and grouping into the subset.	5M
		OR	
9	(a)	What are the various channel assignment strategies with respect to mobile units? Explain in detail.	5M
	(b)	Compare fixed channel assignment and non–fixed channel assignment?	5M
10	(a)	Explain the different types of handoff initiation techniques?	5M
	(b)	With neat sketch explain the concept of Handoff mechanism.	5M
		OR	
11	(a)	Write a short notes on: (i) Inter System Handoff (ii) Soft Handoff	5M
	(b)	Write short notes on the following: (i) Cell splitting (ii) Vehicle locating methods (iii) Dropped cell rate.	5M

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