INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous) Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

ASSIGNMENT QUESTIONS

Course Name	:	CELLULAR AND MOBILE COMMUNICATIONS
Course Code	:	A70434-R15
Class	:	IV B. Tech I Semester
Branch	:	ECE
Year	:	2018 - 2019
Course Coordinator	:	Dr. P.G. Krishna Mohan, Professor Dept of ECE
Course Faculty		Mr. U Somanaidu, Assistant Professor Dept of ECE
	•	Mr. Shashikanth Reddy, Assistant Professor Dept of ECE

COURSE OBJECTIVES:

This course introduces the fundamentals of mobile communications that are important to wireless communication system. It introduces cellular mobile radio systems, various generations of cellular systems and fading channel. It also covers various types of interferences that are co-channel and non co-channel interferences in mobile radio environment. Subsequently the course describes cell coverage for signal and traffic, signal reflections in various terrains, various cell sites antennas & mobile antennas and their analysis. Next different frequency management and channel assignment techniques are described. Finally the concepts of handoffs, dropped calls and cell splitting are analyzed.

ASSIGNMENT-I						
UNIT-I INTRODUCTION TO CELLULAR MOBILE RADIO SYSTEMS						
S. No	Question	Blooms Taxonomy Level	Course Outcome			
1	Discuss the uniqueness of Mobile radio environment.	Remember	1			
2	Write short notes on Doppler spread and coherence time.	Remember	2			
3	Write short notes on First, Second, Third and fourth generation Cellular wireless systems.	Remember	2			
4	Explain cell splitting technique.	Understand	2			
5	Explain the operation of cellular mobile system with block diagram.	Understand	1			
6	What is the significance of hexagonal shaped cells?	Understand	1			
7	Explain the concept of frequency reuse.	Understand	2			
8	Discuss the limitations of conventional mobile telephone system.	Remember	1			
9	Explain the concept of co-channel interference.	Understand	3			
10	Derive the expression for Desired C/I for a normal case in a Omni-directional antenna.	Understand	3			

	UNIT-II CO-CHANNEL INTERFERENCE		
S. No	Question	Blooms Taxonomy Level	Course Outcome
1	Discuss the significance of Time diversity and the Space Diversity.	Understand	3
2	What is channel combiner?	Understand	3
3	What are the methods to reduce adjacent channel interferences?	Remember	2
4	Write short notes on measurement of real time Co-Channel interference.	Understand	4
5	Discuss the significance of Frequency diversity.	Understand	3
6	What is frequency-agile combiner?	Remember	3
7	Compare and explain co-channel and non-co-channel interferences in detail.	Understand	4
8	What is known as near end-far-end interference?	Understand	2
9	Write a short note on umbrella-pattern effect.	Remember	3
10	Explain the Cross talk.	Remember	3
11	Explain Adjacent channel interference.	Understand	2
12	How receiver sensitivity is measured.	Remember	3
	UNIT-III CELL COVERAGE FOR SIGNAL AND		
S. No	Question	Blooms	Course
1		Taxonomy Level	Outcome
1	Explain signal reflections in flat and milly terrain contours and their influences	Understand	5
	In signal datail about the phase difference between direct and reflected notice	The denotes d	5
2	Discuss in detail about the phase difference between direct and reflected pains.	Understand	5
3	Explain constant standard deviation along a path loss curve in detail.	Understand	4
4	List out all the point to point model with its equations.	Understand	2
5	Explain propagation of mobile signal over water and a flat open area.	Understand	2
6	Derive the general formula used for signal propagation over water and flat open area.	Understand	2
7	Explain foliage losses and propagation in near-in distance.	Understand	4
	ASSIGNMENT-II		
8	Write the equation of effective antenna height gain.	Understand	4
9	Draw the diagram of human made structures to find propagation path loss curve.	Understand	3
10	Draw the simple model for propagation over water.	Understand	3
11	Explain the design aspects and merits of an Omni-directional antenna in cell site.	Understand	2
12	What is known as directional antennas? Explain directional antennas for interference in detail.	Understand	2
13	Explain about minimum separation of cell-site receiving antennas.	Understand	3
14	Explain the following, a) Umbrella pattern antenna. b) Space diversity antennas.	Understand	3

	UNIT-IV FREQUENCY MANAGEMENT AND CHANNEL				
S. No	Question	Blooms Taxonomy Level	Course Outcome		
1	Explain underlay and overlay cellular structures in detail with examples.	Understand	2		
2	Define and Discuss in detail about the channel sharing and channel borrowing concepts in detail.	Understand	2		
3	Explain in detail about cell sectorization technique.	Understand	3		
4	4 What is meant by frequency management?		3		
5	What is meant by channel assignment?	Remember	3		
6	Differentiate the terms frequency management and channel assignment.	Understand	2		
7	Write short note on set-up channels.	Remember	2		
8	Define paging channel.	Remember	1		
9	Explain non-fixed channel assignment in detail.	Understand	1		
10	What is known as dynamic channel assignment average blocking and handoff	Remember	2		
	blocking? Explain.				
UNIT-V HANDOFFS AND DROPPED CALLS					
	HANDOFFS AND DROPPED CALLS				
S. No	HANDOFFS AND DROPPED CALLS Question	Blooms Taxonomy Level	Course Outcome		
S. No	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff".	Blooms Taxonomy Level Understand	Course Outcome 5		
S. No	UNITY HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail.	Blooms Taxonomy Level Understand Understand	Course Outcome 5 5		
S. No 1 2 3	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff.	Blooms Taxonomy Level Understand Understand Remember	Course Outcome 5 5 4		
S. No 1 2 3 4	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff. Explain forced handoff and creating a handoff.	Blooms Taxonomy Level Understand Understand Remember Understand	Course Outcome 5 5 4 4		
S. No 1 2 3 4 5	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff. Explain forced handoff and creating a handoff. Define and Discuss in detail about the MAHO and soft handoff techniques	Blooms Taxonomy Level Understand Understand Remember Understand Understand	Course Outcome 5 5 4 4 4 4		
S. No 1 2 3 4 5 6	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff. Explain forced handoff and creating a handoff. Define and Discuss in detail about the MAHO and soft handoff techniques Write short note on initiation of handoff.	Blooms Taxonomy Level Understand Understand Remember Understand Understand Remember	Course Outcome 5 5 4 4 4 3		
S. No 1 2 3 4 5 6 7	HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff. Explain forced handoff and creating a handoff. Define and Discuss in detail about the MAHO and soft handoff techniques Write short note on initiation of handoff. Define and Explain in detail about the delaying handoff?	Blooms Taxonomy Level Understand Understand Remember Understand Understand Remember Understand	Course Outcome 5 5 4 4 4 4 3 2		
S. No 1 2 3 4 5 6 7 8	Orther v HANDOFFS AND DROPPED CALLS Question Define and Discuss in detail about the "Initiation of handoff". Explain delaying a handoff with an algorithm in detail. What are the advantages of delayed handoff? Also explain the parameters for handling a handoff. Explain forced handoff and creating a handoff. Define and Discuss in detail about the MAHO and soft handoff techniques Write short note on initiation of handoff. Define and Explain in detail about the delaying handoff? Comment on two-hand off level algorithm.	Blooms Taxonomy Level Understand Understand Remember Understand Remember Understand Understand	Course Outcome 5 4 4 4 3 2 3		
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