

Code: 20EC4702A

**IV B.Tech - I Semester – Regular / Supplementary Examinations
OCTOBER 2024**

**CELLULAR AND MOBILE COMMUNICATIONS
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain digital cellular architecture and components with a necessary block diagram.	L2	CO1	7 M
	b)	Why is the frequency reuse distance never violated, when allotting frequency channels to various cells? What are the consequences of violating this distance?	L2	CO1	7 M
OR					
2	a)	Derive the expression for carrier to interference ratio in a cellular system for normal and worst-case scenario Omni directional antenna?	L3	CO1	7 M
	b)	Explain various methods of non co-channel interferences.	L2	CO1	7 M

UNIT-II					
3	a)	Explain the point-to-point path loss model.	L2	CO2	7 M
	b)	What are the consequences of choosing : (i) A large Cell Reuse Pattern (Cluster Size) and Small Cell Reuse Pattern (Cluster) on the following parameters : (i) Spectrum Utilization Efficiency (ii) Carrier to Interference Ratio (iii) No.of channels available per cell.	L2	CO2	7 M
OR					
4	a)	Derive the expression for the path difference between direct and reflected paths in a mobile environment.	L3	CO2	7 M
	b)	Explain why Propagation Path Loss is one of the major parameters of interest in analysis of radio wave propagation for mobile communication.	L3	CO2	7 M
UNIT-III					
5	a)	Describe various steps involved in finding antenna height gain in a mobile environment.	L2	CO3	7 M
	b)	Write a short notes on Roof mounted antennas in cellular system.	L3	CO3	7 M
OR					
6	a)	Explain different types of antennas used for coverage and interference reduction.	L2	CO3	7 M
	b)	What are the various channel assignment strategies with respect to cell sites and explain them?	L2	CO3	7 M

UNIT-IV					
7	a)	Distinguish between mobile assisted handoff and soft handoff.	L4	CO3	7 M
	b)	What is intersystem handoff? Explain with a necessary diagram.	L2	CO3	7 M
OR					
8	a)	Compare handoff initiation in analog and digital cellular systems.	L4	CO3	7 M
	b)	Explain with the help of suitable examples. How Cell Splitting helps in increasing the traffic handled?	L2	CO3	7 M
UNIT-V					
9	a)	Explain architecture of GSM with a neat schematic.	L2	CO4	7 M
	b)	What are the different types of services offered by GSM?	L2	CO4	7 M
OR					
10	a)	What are the different types of channels for GSM and explain?	L2	CO4	7 M
	b)	Explain basic architecture of 3G cellular system with a neat sketch.	L2	CO4	7 M