



B.Tech VI Semester Supplementary Examinations, July 2024

**CELLULAR AND MOBILE COMMUNICATIONS
(ECE)**

Maximum Marks: 70

Date: 24.07.2024 Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks		(10X2M=20 Marks)	CO	Bloom Tx
1	List out steps involved in operation of cellular systems.		1	L1
2	List out limitations of conventional mobile telephone system.		1	L1
3	Define the gain of an antenna.		2	L1
4	List out the methods to reduce adjacent channel interference.		2	L1
5	List out few service areas occurring in natural terrain		3	L1
6	What is the minimum separation required between cell site antennas.		3	L1
7	What is channel borrowing.		4	L1
8	What is dynamic channel allocation?		4	L1
9	List out advantages of handoff		5	L1
10	What is meant by handoff algorithm.		5	L1

Part-B

Answer All the following questions.		(5X10M=50Marks)		
11	a) Describe the frequency reuse concept in cellular communication system and derive the equation for the frequency reuse ratio. [6M] b) Write short notes on i) Grade of service and ii) Coherence time. [4M]		1	L2
OR				
12	Explain briefly different ways of improving coverage and capacity in cellular systems. [10M]		1	L2
13	Define cochannel cell. What are the different interferences in cellular systems. Explain each with neat figures. [10M]		2	L2
OR				
14	a) Discuss about maximal ratio combining technique in detail. [5M] b) Write short notes on Ring combiner and Tunable combiner. [5M]		2	L2
15	Discuss about different type of antennas used at cell site. [10M]		3	L2
OR				
16	(a) Derive the expression for phase difference between direct and reflected path. [7M]		3	L2

	(b) The antenna height at cell site is 30m and mobile unit is 3m and distance between them is 10 km. Obtain phase difference at 850 MHz.[3M]		
17	a) Describe grouping of voice, set up channels. [4M] b) Write short notes on forcible borrowing channel assignment scheme.[6M]	4	L2
	OR		
18	a) Compare Omni and Sectorized cells for seven cell system in fixed channel assignment. [5M] b) Write short notes on channel borrowing and channel sharing. [5M]	4	L2
19	a) Explain MAHO and soft handoff techniques. [6M] b) Write short notes on queuing of handoffs. [4M]	5	L2
	OR		
20	Explain in detail the need for handoff and determine the probability of requirement of handoff. [10M]	5	L2