

Enrolment Number: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.TECH MIDSEM EXAMINATION
8th SEMESTER
ACY-2021-22 (EVEN SEM)

Subject Name (203107421): Mobile Communication Networks

Branch: EC

Date: 5-08-2022

Time: 10:30am to 12:00 noon

Total Marks: 40

Sf. No.		Marks
Q.1	(A)	05
	<ol style="list-style-type: none">1. What is the main objective of Frequency Reuse concept in cellular communication system?2. What is the meaning of "Soft Handoff"?3. Define the term "Co-Channel Interference".4. Maximum how many co-channel cells are creating interference in a particular cell?5. What is the significance of studying various radio wave propagation models?	
	(B) Define the following terms with reference to cellular communication system.	05
	<ol style="list-style-type: none">1. Cell2. Cluster3. Full Duplex Communication4. Mobile Switching center5. Base station	
Q.2	Attempt any four(Short Questions)	12
	<ol style="list-style-type: none">(1) Explain the methods to reduce Co-channel and Adjacent channel interference in the system.(2) State the comparisons between 2G and 3G cellular communication system.(3) Briefly explain the cell dragging problem(4) Define the term (i) Coherence Time (b) Coherence Bandwidth(5) List out the factors affecting the small scale fading.	
Q.3	Attempt any two	08
	<ol style="list-style-type: none">(1) If a 15dB SIR required for satisfactory forward channel performance in cellular communication system. What is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent (a) $n = 4$ and (b) $n = 3$. Assume there are 6- co-channel cells in the first tier.(2) (i) Find out the far field distance for an antenna with maximum dimension of 1meter and operating frequency 900MHz. (ii) Calculate the Brewster angle for a wave impinging on a ground having a Permittivity of $\epsilon_r = 4$.	

(3) Consider a transmitter which radiates a sinusoidal carrier frequency of 1850MHz. For a vehicle moving with the velocity of 26.82m/sec, compute the received carrier frequency if the mobile is moving (a) directly towards the transmitter (b) directly away from the transmitter (c) in a direction which is perpendicular to the direction of arrival of the transmitted signal.

QA (A) Explain the free space path loss model in detail. 05

(B) Briefly explain the proper and improper handoff process with suitable diagram. 05

OR

(B) Explain the Okumura's radio wave propagation model in detail. 05