R22 Regulation *Subject code:4P6DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, April 2026

CELLULAR AND MOBILE COMMUNICATIONS

(ECE)

Maximum Marks: 60 Date:21.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
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 (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	Define Grade of Service.	1M	1	L1
b)	Mention the elements of basic cellular systems.	1M	1	L1
c)	List out different types of diversities.	1M	2	L1
d)	Define the term Directivity of an antenna system.	1M	2	L1
e)	Give the expression for phase difference between direct and reflected paths.	1M	3	L1
f)	List the antennas used for space diversity.	1M	3	L1
g)	Define frequency management.	1M	4	L1
h)	What is channel sharing?	1M	4	L1
i)	List out advantages of handoff	1M	5	L1
j)	What are the types of handoffs?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Derive C/I in a cellular system for normal case and Worst-case scenario with an omni-directional antenna system.	10M	1	L2
	OR			
3	a) Discuss the performance criteria of the basic cellular system. b) write the characteristics about Generations of mobile services.	5M 5M	1	L2
4	Determine the signal to co-channel interference ratio at the mobile receiver located at the boundary of its omnidirectional operating cell, under the influence of interfering signals from six co-channel interfering cells in the first tier in a cellular system designed with i) N=4 and ii) N=7. Assume path loss exponent is 4.	10M	2	L2
	OR			
5	Explain the near field and far field interference and how to avoid it.	10M	2	L2
6	a) Explain in detail about long distance propagation. b) Explain the role of directional antennas for interference reduction.	5M 5M	3	L2
	OR			

7	Derive the expression for phase difference between direct and reflected path.	10M	3	L2
8	Explain non-fixed channel assignment algorithms.	10M	4	L2
	OR			
9	(a) Compare Omni and Sectorized cells for seven cell system in fixed channel assignment. (b) Write short notes on channel borrowing and channel sharing.	5M 5M	4	L2
10	What is Handoff? Explain the handoff process in cellular systems.	10M	5	L2
	OR			
11	Explain in detail the need for handoff and determine the probability of requirement of handoff.	10M	5	L2