R22 Regulation *Subject code: 4P6DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, November 2025

CELLULAR AND MOBILE COMMUNICATIONS

(ECE)

Maximum Marks: 60 Date:13.11.2025 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)	Mention the elements of basic cellular systems.	1M	CO1	BT1
b)	What is Grade of Service?	1M	CO1	BT1
c)	What is polarization diversity?	1M	CO2	BT1
d)	List the methods to reduce adjacent channel interferences.	1M	CO2	BT2
e)	Enlist the merits of point-to-point model.	1M	CO3	BT2
f)	Give the use of space diversity antenna.	1M	CO3	BT1
g)	What is meant by channel assignment?	1M	CO4	BT1
h)	Differentiate channel sharing and borrowing.	1M	CO4	BT2
i)	Mention the types of handoffs.	1M	CO5	BT1
j)	Write a note on initiation of handoff.	1M	CO5	BT1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) What are the limitations of conventional mobile telephone system? Describe the various Generations of wireless mobile communication. b) What are the main advantages and disadvantages of various cellular structures?	5M 5M	CO1	BT3
	OR			
3	a) Explain the co-channel interference reduction factor and derive the general formula for C/I. b) What is cell-splitting? Explain its types in detail.	5M 5M	CO1	BT3
4	Discuss in details the various techniques to measure co-channel interference, prove that the real time co-channel interference measurement is difficult to achieve.	10M	CO2	BT4
	OR			
5	a) Explain non-co-channel interference effects on coverage and interferences. b) Explain the effects of coverage and interference by power decrease and decrease antenna height.	5M 5M	CO2	BT3

6	Derive the general formula used for signal propagation over water and flat open area.	10M	CO3	BT3
	OR			
7	a) What is known as directional antennas? Explain directional antennas for interference in detail. b) Explain umbrella pattern antenna and Omni-directional antennas in detail.	5M 5M	CO3	BT3
8	Describe the concept of frequency management concerned to numbering the channels and Grouping into the subset.	10M	CO4	BT2
	OR			
9	What do you understand by non-fixed channels assignment? Describe the corresponding algorithms.	10M	CO4	BT3
10	a) What are the various methods of delaying handoff? Explain briefly. b) Explain a two-level handoff scheme with suitable example.	5M 5M	CO5	BT2
	OR			
11	a) What is meant by call drop? Explain and suggest methods to reduce call drop rate. b) Write short notes on different types of hand off mechanisms.	5M 5M	CO5	BT3