

Roll Number:

IIITDM Jabalpur
End Term Examination, May 2024

SKT

Duration: 3 hrs.

Max Marks: 60

Subject Code: ECE207b

Subject Name: Architecture of Cellular Systems

Instructions: All questions are compulsory.

S. No.	Descriptive Questions	Marks
1	Starting from 1G, write a short note on the evolution of 3G networks.	6
2	Describe the concepts of co-channel interference and adjacent channel interference in cellular communication. Provide detailed explanations of each type of interference, including their causes, effects, and methods for mitigating their impact on communication quality.	6
3	Compare and contrast hard handoff and soft handoff techniques in cellular communication systems. Provide examples of scenarios where hard handoff and soft handoff are utilized, and discuss their impact on call quality, network efficiency, and user experience.	6
4	What is trunking and grade of service in the context of cellular communication system?	6
5	How cell splitting and microcell zone helps in improving coverage and capacity in cellular systems?	6
6	Explain with diagram the working principle of Time Division Multiple Access (TDMA).	6
7	What is Code Division Multiple Access (CDMA) and how does it differ from other multiple access techniques such as Frequency Division Multiple Access (FDMA) and TDMA? Explain the basic principles of CDMA and its advantages in wireless communication systems. Discuss key concepts like spreading codes, interference rejection, and capacity enhancement in CDMA networks.	6
8	How is Orthogonal Frequency Division Multiplexing (OFDM) different from Frequency Division Multiplexing (FDM)? Which one is better in terms of resource optimization?	6
9	What is Non-Orthogonal Multiple Access (NOMA)? Provide a detailed explanation supported by analytical expressions to elucidate its operational principles and advantages in wireless communication systems.	6
10	Explain the concept of Multiple-Input and Multiple-Output (MIMO) with the supporting expressions for the received signals.	6