Reg. No. : | | | | | | | | | | | | |

Question Paper Code:R8I61

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

One Credit Course

CSE (Internet of things)

R21UIO861 - IoT and 5G Technologies

(Regulations R2021)

Duration: 1.30 hours Maximum: 50 Marks

PART A - (5 x 10 = 50 Marks)

Answer any Five of the following Questions

1.	Trace the evolution of mobile networks from 1G to 5G, comparing the key performance metrics and technological shifts that defined each successive generation.	CO1–U	(10)
2.	Explain the core vision of IMT-2020 for 5G technology by detailing its three primary usage scenarios and their corresponding key performance capabilities.	CO1–U	(10)
3.	Illustrate the 5G system architecture with a neat diagram. Briefly explain the roles of the 5G Core (5GC) and the Next-Generation Radio Access Network (NG-RAN) in the overall architecture.	CO1–U	(10)
4.	Describe the key radio technologies that are fundamental to 5G communication. Explain how these technologies contribute to the enhanced performance of 5G networks compared to previous generations.	CO1–U	(10)
5.	Propose a practical implementation of Multi-access Edge Computing (MEC) in a smart city environment to enhance the real-time data processing and response time of an IoT-based emergency alert system.	CO2-App	(10)
6.	Differentiate between Massive IoT (mMTC) and Critical IoT (URLLC) by explaining their primary objectives and the specific network capabilities each service demands from 5G.	CO1 – U	(10)
7.	A company plans to deploy a global 5G-IoT logistics tracking system. Analyze the potential challenges they will face concerning international standardization and spectrum regulation, and propose a strategy to navigate these complexities.	CO3 - App	(10)
8.	Explain the pivotal role of network management and orchestration in maintaining Quality of Service (QoS) for diverse 5G-IoT applications. How does orchestration facilitate dynamic resource allocation?	CO1–U	(10)

9.	Discuss the role and importance of key communication protocols, such as MQTT and CoAP, in ensuring efficient and scalable data transmission for constrained IoT devices over a 5G network.	CO2- App	(10)
10.	Explain the roles of Software-Defined Networking (SDN) and Network Functions Virtualization (NFV) in the 5G architecture. How do these technologies contribute to the flexibility, scalability, and efficiency of 5G networks?	CO2- App	(10)