R22 Regulation *Subject code:4O6GA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, November 2025

EMBEDDED SYSTEM DESIGN

(CSE(AI&ML))

Maximum Marks: 60 Date:17.11.2025 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)	What are the main components of an embedded system?	1M	CO1	L1
b)	List any two quality attributes of an embedded system	1M	CO1	L1
c)	Define Commercial Off-The-Shelf (COTS) components with an example.	1M	CO2	L1
d)	What is the role of a watchdog timer in an embedded system?	1M	CO2	L1
e)	Show the purpose of cloud computing in embedded systems	1M	CO3	L2
f)	Define onboard communication interface with an example.	1M	CO3	L1
g)	Differentiate between a process and a thread.	1M	CO4	L4
h)	Relate task scheduling with the functioning of an RTOS.	1M	CO4	L2
i)	What is a remote procedure call (RPC)?	1M	CO5	L1
j)	Differentiate between multitasking and multiprocessing.	1M	CO5	L4
	Part-B			
Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Discuss the major application areas and purposes of embedded systems. Provide at least five examples.	10M	CO1	L3
	OR			
3	Describe the characteristics of embedded systems. How do these characteristics influence the system design.	10M	CO1	L2
4	Evaluate the suitability of general-purpose and domain-specific processors in different embedded system applications.	10M	CO2	L5
	OR			
5	Discuss the differences between ASICs and PLDs with respect to their application in embedded system design.	10M	CO2	L3
6	Explain how IoT has influenced the recent trends in embedded systems, and discuss its integration challenges.	10M	CO3	L4
	OR			

7	Analyze the impact of development languages, frameworks, and open standards on modern embedded system design and implementation.	10M	CO3	L4
8	Explain the role of multiprocessing and multitasking in real-time embedded system design.	10M	CO4	L4
	OR			
9	Differentiate between the types of operating systems using appropriate examples.	10M	CO4	L4
10	Discuss various task synchronization issues and how they can be resolved in embedded systems.	10M	CO5	L3
	OR			
11	Compare and contrast shared memory and message passing for inter-task communication.	10M	CO5	L5