R22 Regulation *Subject code: 4P7DC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, May 2026

EMBEDDED SYSTEM DESIGN

(ECE)

Maximum Marks: 60 Date:13.05.2026 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	BTL
1.a)	What is the difference between system and an embedded System?	1M	1	L1
b)	What are the challenges of embedded systems?	1M	1	L1
c)	What is Memory Shadowing?	1M	2	L1
d)	Write the function of Watchdog timer in an embedded system.	1M	2	L1
e)	What are the latest trends in embedded OS?	1M	3	L1
f)	What are the external communication interface devices?	1M	3	L1
g)	What is meant by task synchronization?	1M	4	L1
h)	Difference between multiprocessing and multitasking.	1M	4	L1
i)	What attributes we consider while selection of RTOS?	1M	5	L1
j)	What is mean remote procedure call	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Describe the overview of design process of embedded system	10 M	1	L3
	OR			
3	a) Explain non-operational quality attribute in Embedded system design b) Mention various applications of Embedded System.	5M 5M	1	L2 L1
4	a) Explain the role of ASIC in Embedded System design in detail. b) Explain various programming languages used for the development of embedded systems.	5M 5M	2	L2
	OR			
5	a) Write the difference between general purpose processors and domain specific processors. b) What are the advantages and disadvantages of Commercial Off-The-Shelf (COTS) components.	5M 5M	2	L1 L2
6	Explain in brief about the following communication interfaces i) Wi-Fi ii) Zigbee	10M	3	L3
	OR			
7	Explain in detail about on-board communication interface.	10M	3	L2

8	Explain any three types of inter process communication functions between the tasks.	10M	4	L3
	OR			
9	Describe different types of task scheduling in Embedded systems.	10M	4	L2
10	With the neat sketch explain the architecture of device driver, and also mention its applications?	10M	5	L3
	OR			
11	Explain the different task communication synchronization issues occurred in IPC.	10M	5	L2

20