R20 Regulation *Subject code:3E7DC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, April 2026

EMBEDDED SYSTEM DESIGN

(ECE)

Maximum Marks: 70 Date: 14.05.2026 . Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 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 (10X2M=20 Marks)		Marks	CO	BTL
1	Classify the embedded systems.	2M	1	L1
2	Give the applications of an embedded system.	2M	1	L1
3	Define Sensor.	2M	2	L1
4	What is the purpose of reset circuit?	2M	2	L1
5	Write about the Optocoupler.	2M	3	L1
6	Write about RS232C interface?	2M	3	L1
7	Write the limitations of the high-level language based development?	2M	4	L1
8	What is out-of-circuit programming?	2M	4	L1
9	Write the various activities performed during the Conceptualization phase of an Embedded product development.	2M	5	L1
10	List the drawbacks of Linear model for embedded product development.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Discuss the characteristics of embedded systems in detail.	10M	1	L2
	OR			
12	What is quality attribute? Discuss the quality attributes to be considered in any embedded system design.	10M	1	L2
13	Explain the components of typical embedded systems in detail with neat diagram.	10M	2	L2
	OR			
14	Demonstrate the role of Watch dog Timer & Brown out protection circuit in embedded system with neat diagrams.	10M	2	L2
15	Illustrate the working of stepper motor with neat diagrams.	10M	3	L2
	OR			
16	Explain the different on-board communication interfaces in brief.	10M	3	L2
17	What is embedded firmware? Explain in detail about the different development languages available for embedded firmware.	10M	4	L2

	OR			
18	Explain the different techniques for embedding the firmware into the target board for non-OS based embedded system.	10M	4	L2
19	Illustrate the different phases of Embedded Product Development Life Cycle (EDLC) with neat diagram.	10M	5	L2
	OR			
20	Discuss in detail about Prototyping/Evolutionary Model and Fountain Model.	10M	5	L2