R20 Regulation *Subject code: 3E8DG*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VIII Semester Supplementary Examinations, May 2026

EMBEDDED REAL TIME OPERATING SYSTEMS

(ECE)

Maximum Marks: 70 Date:06.05.2026 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 which carries 10M.
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	Bloom Tx
1	How to Choose an RTOS?	2M	CO1	BT1
2	Write short notes on specification in embedded system design.	2M	CO1	BT2
3	What is starvation in scheduling?	2M	CO2	BT2
4	What is the problem with SJF scheduling?	2M	CO2	BT2
5	What is critical section in RTOS?	2M	CO3	BT1
6	Define deadlock.	2M	CO3	BT2
7	List out the features of Micro C/OS-II.	2M	CO4	BT1
8	What are the bottlenecks faced by Embedded Industry?	2M	CO4	BT1
9	List any two specifications of ACVM (Automatic Chocolate Vending Machine).	2M	CO5	BT2
10	What is CRC (cyclic redundancy check)?	2M	CO5	BT1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
11	Explain the architecture design of GPS moving map.	10M	CO1	BT2
	OR			
12	What is task control block (TCB)? Explain the structure of the TCB.	10M	CO1	BT2
13	Three processes with process IDs P1,P2,P3 with estimated completion time 4,6,5 milliseconds and priorities 1,0,3 (0-highest priority , 3-lowest priority) respectively enters Ready queue after 5 milliseconds. Calculate the waiting time and Turn Around Time (TAT) (assuming there no IO waiting for the processes) in non-preemptive priority based scheduling algorithm.	10M	CO2	BT3
	OR			

14	Explain Round Robin (RR) scheduling. What are the advantages and disadvantages of Round Robin scheduling?	10M	CO2	BT3
15	What is deadlock and explain about Coffman conditions?	10M	CO3	BT3
	OR			
16	a) Summarize different task communication synchronization issues encountered in inter process communication. b) Write about a critical section using semaphores in operating system.	5M 5M	CO3	BT4
17	What are features of VxWorks and explain detail about different functions used in VxWorks RTOS.	10M	CO4	BT3
	OR			
18	Explain 'task' in VxWorks context? Explain the different possible states of a task under VxWorks kernel.	10M	CO4	BT3
19	Explain the block diagram of ACVM (Automatic Chocolate Vending Machine) hardware including microcontroller.	10M	CO5	BT3
	OR			
20	Explain software layers in software architecture of a digital camera system.	10M	CO5	BT3