R20 Regulation *Subject code: 3O5EA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, June/July 2023

EMBEDDED SYSTEMS DESIGN

OPEN ELECTIVE

(Computer Science & Engineering)

Maximum Marks: 70 Date:01.07.2023 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)

1 List the categories of embedded system.
2 How would you classify the major application areas of embedded system?
3 Define embedded microcontroller.
4 What is the need of watch dog timer?
5 Give some examples for sophisticated embedded systems
6 What does the execution unit of a processor in an embedded system do?
7 Mention the functions of RTOS.
8 How does the scheduler know when a task has become blocked or unblocked?
9 Define Task Control Block.
10 Define dead lock.

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 Describe the following terms
   A. Embedded System versus Computing System (5)
   B. Classification of Embedded System (5)

OR

12 Brief on the following
   A. History of Embedded Systems (5)
   B. Embedded systems applications (5)

13 Categorize the embedded firmware design approaches and explain in detail. (10)

OR

14 Brief on the following
   A. PLDs (4)
   B. ASICs (3)
   C. COTS (3)

15 Explain the trends in embedded systems. (10)

OR

16 Discuss in detail: Onboard and External Communication Interfaces of embedded systems. (10)

17 Explain Dinning philosopher's problem with neat sketch. (10)

OR

18 Explain the cooperative scheduling and round robin scheduling with a suitable diagram. (10)

19 Explain different types of semaphores. (10)

OR

20 Explain task communication in detail. (10)