## DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

### Supplementary End Semester Examination – Summer 2022

**Course: B. Tech.**    **Branch : E&TC**    **Semester : VII**

**Subject Code & Name: BTETPE703A   Embedded System Design**

**Max Marks: 60**    **Date:22/08/2022**    **Duration: 3.45 Hr.**

*Instructions to the Students:*
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

|  |  | (Level/CO) | Marks |
|---|---|---|---|
| **Q. 1** | **Solve Any Two of the following.** | | |
| **A)** | What are the characteristics of an Embedded System. | CO 1 | **6** |
| **B)** | With neat block diagram explain basic structure of an embedded system. | CO 1 | **6** |
| **C)** | State and explain classification of Embedded Systems based on performance of the microcontroller. | Level 4 | **6** |
| | | | |
| **Q.2** | **Solve the following questions.** | | |
| **A)** | What is RTOS? State and explain any three functions of Real Time Kernel. | Level 4 | **6** |
| **B)** | Distinguish between Harvard & Von-Neumann Architecture. | Level 3 | **6** |
| | | | |
| **Q. 3** | **Solve Any Two of the following.** | | |
| **A)** | Explain in brief about Digital Signal Processors. | Level 4 | **6** |
| **B)** | Distinguish between RISC and CISC systems. | Level 1 | **6** |
| **C)** | Explain following major levels of abstraction in the Embedded System design process | Level 3 | **6** |
| |    i.    Requirement<br>  ii.   Specification<br>iii.   System Integration | | |
| | | | |
| **Q.4** | **Solve Any Two of the following.** | | |
| **A)** | Explain in brief Co-operative, Preemptive and Non-preemptive multitasking. | CO 4 | **6** |
| **B)** | Distinguish between Hard Real Time Systems and Soft Real Time System. | Level 2 | **6** |
| **C)** | Explain in brief three different types of RTOS. Also state and explain in brief about essential factors that you need to consider for selecting | CO 4 | **6** |

**RTOS.**

**Q. 5** **Solve Any Two of the following.**

A) **Explain Rate Monotonic (RM) Scheduling Algorithm with suitable example.** Level 2 **6**

B) **Explain Earliest-Deadline First Scheduling algorithm with suitable example.** Level 2 **6**

C) **Explain following quality attributes of an Embedded System.** CO 1 **6**

    i.    **Throughput**
    ii.    **Reliability**
    iii.   **Maintainability**

**\*\*\* End \*\*\***