

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS

III-B.TECH-II-Semester End Examinations (Supply) - December- 2025

EMBEDDED SYSTEM DESIGN

(ECE)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) Give some major applications of Embedded systems. [2M]
- b) What is the difference between a system and an embedded system? [2M]
- c) Explain the concept of Memory Shadowing. [2M]
- d) What is Actuator? [2M]
- e) Write the need of a Watchdog timer. [2M]
- f) Briefly explain Brown-out protection circuit. [2M]
- g) What is Thread in the operating system context? [2M]
- h) What is Task Control Block (TCB)? [2M]
- i) List the Task Synchronization Issues. [2M]
- j) What are the considerations to choose an RTOS? [2M]

PART-B

(50 Marks)

2. Explain in detail the classification of embedded system. [10M]
- OR**
3. Discuss the purpose of Embedded systems. List the design metrics used to compare them. [10M]
4. Explain the different on-board communication interfaces in brief. [10M]
- OR**
5. Explain about the core of embedded system. [10M]
6. What is the need of embedded firmware? Briefly explain the embedded firmware development languages. [10M]
- OR**
- 7.a) Describe the purpose of a Real Time Clock in an embedded system, explain in detail. [5M]
- b) Explain the function of Watchdog timer in an embedded system. [5M]
8. What is a process? With a neat representation explain the process states and state transition. [10M]
- OR**
9. Explain the different types of Operating Systems. [10M]
10. What is a device driver? Explain the role of device driver in an embedded OS. [10M]
- OR**
11. Explain the concept of Shared memory in task communication. [10M]
