

**CMR ENGINEERING COLLEGE: : HYDERABAD****UGC AUTONOMOUS****IV–B.TECH–I–Semester End Examinations (Supply) - December- 2025****INTRODUCTION TO EMBEDDED SYSTEMS****(IT)****[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) What are the important components of embedded system? [2M]
- b) List the characteristics of Embedded systems. [2M]
- c) Summarize the advantages of PLD's in embedded systems. [2M]
- d) Describe Commercial of the Shelf Components (COTS). [2M]
- e) What is opcode? [2M]
- f) What is code reverse Engineering? [2M]
- g) Analyse different queues associated with process scheduling. [2M]
- h) Interpret File system management. [2M]
- i) Define emulator, simulator in IDE. [2M]
- j) Discuss hardware debugging in real time systems. [2M]

**PART-B****(50 Marks)**

- 2.a) Difference between General Computing and Embedded systems. [5M]
  - b) Write short notes on applications of Embedded systems. [5M]
- OR**
- 3.a) Explain the operational quality attributes in embedded system design contest. [5M]
  - b) Mention the important characteristics of embedded systems. [5M]
4. Explain in detail about different types of memory in embedded systems. [10M]
- OR**
- 5.a) What is the role of sensors and actuators in embedded systems? [5M]
  - b) How does I2C protocol work with diagram? [5M]
- 6.a) Discuss various steps involved in the assembling of an assembly language program. [5M]
  - b) Design Reset Circuit with neat labelled diagram. [5M]
- OR**
7. Discuss the advantages and drawbacks of Assembly Language instructions. [10M]
8. List various activities which are involved in the creation of process and threads with neat sketches. [10M]
- OR**
- 9.a) Define the following. [5M]
    - i) Semaphore,
    - ii) Mutex.
  - b) Explain about Remote Procedure Calls and Sockets along with neat sketches. [5M]
10. Explain various file formats generated during cross compilation. [10M]
- OR**
11. Explain various hardware and firmware debugging techniques in detail. [10M]

\*\*\*\*\*