

**Code No: 156AV****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, July - 2023****EMBEDDED SYSTEM DESIGN****(Electronics and Communication Engineering)****Time: 3 Hours****Max. Marks: 75**

- Note:** i) Question paper consists of Part A, Part B.  
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.  
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A****(25 Marks)**

- 1.a) Define "Time-to-market". [2]
- b) Write the difference between Embedded Systems and General computing systems. [3]
- c) Discuss the different types of RAM used for embedded system design? [2]
- d) What are the considerations for processor selection? [3]
- e) List the various methods available for developing the embedded firmware. [2]
- f) What is absolute object file? [3]
- g) What is the function of timer in RTOS? [2]
- h) Discuss briefly about Task Scheduling. [3]
- i) Define task synchronization? [2]
- j) What is meant by concurrency of task execution in real time system? [3]

**PART – B****(50 Marks)**

2. Explain the various purposes of embedded systems with illustrative examples. [10]
- OR**
3. Explain in detail the classification of embedded system. [10]
4. Explain the different communication interfaces with respect to embedded systems. [10]
- OR**
5. What is programmable logic device? What are different types of PLDs? Explain the role of PLDs in embedded system design. [10]
- 6.a) What are the design criteria of external brown-out protection circuit.
- b) How to design and implement firmware for embedded systems? [5+5]
- OR**
7. Explain the functionality and role of Brown out protection circuit in embedded system. [10]

8. Explain the different multitasking models in the operating system context. [10]

**OR**

9. What is the need of an embedded firmware? Briefly explain the embedded firmware development languages. [10]

10.a) Explain message passing technique for inter process communication in detail.

b) Explain the concept of Shared memory in task communication. [5+5]

**OR**

11. Describe the use of RTOS in embedded systems. [10]

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used paper July/Aug-2023