

**R16**

Code No: 137CH

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech IV Year I Semester Examinations, December - 2019**

**EMBEDDED SYSTEM DESIGN**

**(Common to ECE, EIE)**

**Time: 3 Hours**

**Max. Marks: 75**

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

Part A is compulsory which carries 25 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 as sub questions.

**PART – A**

**(25 Marks)**

- 1.a) Give different classifications of embedded systems. [2]
- b) Give the typical characteristics of an embedded system. [3]
- c) What is the role of DSP in an embedded system design? [2]
- d) List the differences between RAM and ROM. [3]
- e) What is an embedded firmware? [2]
- f) Briefly explain about oscillator unit in Embedded System. [3]
- g) Write the advantages of threads. [2]
- h) What is the difference between multiprocessing and multitasking? [3]
- i) Write the advantages of RPC. [2]
- j) What is task synchronization in embedded systems? [3]

**PART – B**

**(50 Marks)**

2. Explain the various purposes of embedded systems in detail with example. [10]
- OR
3. What are the quality attributes of embedded systems? Explain. [10]
4. What are the various types of memories used in embedded systems? Explain. [10]
- OR
5. Discuss about external communication interfaces in detail. [10]
6. Explain the need of Brown-out Protection Circuit and Watchdog Timer in Embedded System. [10]
- OR
7. What are the different approaches available for Embedded Firmware development? [10]
8. Explain how thread and process are used in embedded system. [10]
- OR
9. What are the different types of operating systems? Explain. [10]
- 10.a) Discuss about shared memory in detail. [5+5]
- b) Explain Remote Procedure call with an example. [5+5]
- OR
- 11.a) What is the use of Device Drivers? Explain. [4+6]
- b) Discuss about task communication issues in brief. [4+6]