

Code No: 117CZ

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, March - 2017

EMBEDDED SYSTEMS DESIGN

(Electronics and Communication Engineering)

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, c as sub questions.

**Part- A (25 Marks)**

- 1.a) Define Embedded System. [2]
- b) List out the differences between an embedded system and a general purpose computer. [3]
- c) Explain the concept of Memory Shadowing. [2]
- d) Write a short note on COTS. [3]
- e) What is the use of reset circuit in an embedded system? [2]
- f) Briefly explain Brown-out protection circuit. [3]
- g) What is the use of RTOS in Embedded System Design? [2]
- h) Discuss briefly about Task Scheduling. [3]
- i) What are the considerations to choose an RTOS? [2]
- j) Discuss the issues in Task Synchronization briefly. [3]

**Part-B (50 Marks)**

2. Explain in detail the classification of embedded system. [10]
- OR**
- 3.a) Describe the characteristics of an embedded system in detail.
  - b) Explain the quality attribute portability and reliability in embedded system design context. [5+5]
- 4.a) What are the different types of memories used in embedded system design? Explain each with examples.
  - b) Explain the role of sensors in embedded system design. [5+5]
- OR**
5. Explain the different communication interfaces with respect to embedded systems. [10]
- 6.a) Describe the purpose of a Real Time Clock in an embedded system, explain in detail.
  - b) Explain the function of Watchdog timer in an embedded system. [5+5]
- OR**
7. What is the need of an embedded firmware? Briefly explain the embedded firmware development languages. [10]

8. What is a process? With a neat representation explain the process states and state transition. [10]

**OR**

9. Explain the different thread binding models for user and kernel level threads. [10]

10:a) Explain message passing technique for inter process communication in detail. [5+5]  
b) Explain the concept of Shared memory in task communication.

**OR**

11. What is a device driver? Explain the role of device driver in an embedded OS. [10]

---ooOoo---