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

OR

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