Code No: 117CZ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2017
EMBEDDED SYSTEM DESIGN
(Common to ECE, ETM)

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)	List the characteristics of an embedded system.	[2]
b)	What is the difference between a system and an embedded system?	[3]
c)	What is actuator?	[2]
d)	What are the considerations for processor selection?	[3]
e)	Explain the role of reset circuit in an embedded system.	[2]
f)	What is the difference between real time clock and watchdog time.	[3]
g)	When do you use cooperative scheduling?	[2]
h)	What is the function of timer in RTOS?	[3]
i)	What is Remote Procedure Call and explain its working?	[2]
j)	What is meant by concurrency of task execution in real time system?	[3]

PART-B

(50 Marks)

2.a) Explain the major application areas of embedded systems.
b) What are the components of Embedded System Hardware? [5+5]

OR

3. Discuss the purpose of embedded systems. List the design metrics used to compare them. [10]

4. With a neat diagram, explain the architecture of a general purpose processor. [10]

OR

5.a) Write the difference between general purpose processors and domain specific processors.
b) Discuss the aspects of memory allocation and mapping in embedded domain. [5+5]

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 with one example, how to change the bus frequency of the processor. [10]

8.a) How do we initiate round robin time series scheduling?

b) How lower priority task executes in a preemptive scheduler? [5+5]

OR

9. Write the basic design principles when using an RTOS to design of sample RTOS.[10]

10. Explain in detail the following device drivers
a) Serial port device driver
b) Device drivers for internal programmable timing devices. [5+5]

OR

11.a) Explain the inter task communication offered by RTOS.

b) Explain message-passing communication system in detail. [5+5]

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