

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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