Code No: 117CZ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, April/May - 2018
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) Give few examples of embedded systems. [2]
b) Give some major applications of Embedded Systems. [3]
c) Write the advantages of PLDs. [2]
d) Explain briefly about memory shadowing. [3]
e) List the types control algorithms design exists in embedded firmware development. [2]
f) What are the circuits are essential for the proper functioning of processor/controller of the embedded system design. [3]
g) What is an operating system? What are its primary functions? [2]
h) What is the use of RTOS in Embedded System Design? [3]
i) Define Coffman conditions. [2]
j) Discuss the issues in Task Synchronization briefly. [3]

PART-B

(50 Marks)

2. Discuss the Characteristics and Quality Attributes of Embedded Systems. [10]

OR

3. Compare the embedded system and general purpose computing system in detail. [10]

4. What is the difference between microprocessors and microcontrollers? Explain the role of microprocessors and controllers in embedded system design. [10]

OR

5. What is sensor? Explain its role in embedded system design. Illustrate with an example. [10]

6. What is the role of reset circuit and Brown-out Protection Circuit in embedded system? [10]

OR

7. Explain the different Embedded Firmware Design Approaches. [10]

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

OR

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

10. Explain in detail, the different task communication synchronization issues encountered in Inter Process communication. [10]

OR

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

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