

Code No: 117CZ

R13**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, November/December - 2016****EMBEDDED SYSTEM 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 "Time-to-market". [2]
- b) What is the quality attribute "Portability" in the embedded system design context. [3]
- c) What is the role of ASIC in Embedded System design? [2]
- d) What is Actuator? [3]
- e) What is the role of Reset Circuit in embedded system? [2]
- f) What are the merits and drawbacks of 'recursion'? [3]
- g) What is an Operating system? What are its primary functions? [2]
- h) What is task control block (TCB)? [3]
- i) Define Coffman conditions. [2]
- j) How multiple threads of a process co-operate? [3]

PART-B**(50 Marks)**

2. Define an embedded system? Explain the characteristics of Embedded Systems. [10]

OR

3. Explain the various purposes of embedded systems in detail with illustrative examples. [10]

- 4.a) Explain the different factors that needs to be considered in the selection of memory for embedded systems.

- b) Explain the difference between I²C and SPI communication interface. [5+5]

OR

5. Explain the different communication buses used in automotive application. [10]

6. Explain the different sections of a memory segment allocated to an application by the memory manager. [10]

OR

7. Explain the difference between 'pointer to constant data' and 'constant pointer to data' in Embedded C programming. Explain the syntax for declaring both. [10]
- 8.a) Explain starvation in the process scheduling context. Explain how starvation can be effectively tackled.
- b) What is the difference between a General Purpose kernel and Real-Time kernel? Give an example for both. [5+5]

OR

9. Explain the different multitasking models in the operating system context. [10]
10. Explain in detail, the different task communication synchronization issues encountered in Inter Process communication. [10]

OR

11. Explain the architecture of device driver, with neat sketch and give the applications of device drivers. [10]

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