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 I^2C 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 kernal 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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