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10EC74

Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017
Embedded System Design

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain a microprocessor based embedded system with diagram. **(08 Marks)**

b. With necessary block diagram, explain the embedded system life cycle. **(08 Marks)**

c. Explain the important steps in developing a embedded system. **(04 Marks)**

2 a. Analyze how errors propogate under : (i) Addition process (ii) Multiplication process. **(08 Marks)**

b. With the help of diagram, explain

(i) Index mode data transfer operation.

(ii) Program counter relative operation. **(08 Marks)**

c. With timing diagram, explain (i) Writing to a register (ii) Reading from a register. **(04 Marks)**

3 a. With diagram, explain direct mapping implementation and associative mapping cache implementation. **(08 Marks)**

b. With diagram, explain the operation of DRAM. With timing diagram, explain read operation. **(08 Marks)**

c. Explain the concept of dynamic memory allocation. **(04 Marks)**

4 a. Develop hardware and software specification for designing a counter and give data control flow diagram. **(08 Marks)**

b. With diagram explain (i) Water fall life cycle model (ii) Spiral life cycle model. **(08 Marks)**

c. Compare functional model and architectural model. **(04 Marks)**

PART – B

5 a. Explain how memory is managed at,

(i) System level (ii) Process level. **(08 Marks)**

b. Explain operating system architecture with diagram. **(08 Marks)**

c. Explain multithreaded OS. **(04 Marks)**

6 a. Organize general purpose registers as,

(i) Four different contexts (ii) Overlapping contexts. **(08 Marks)**

b. Explain the structure of TCB with diagram. **(08 Marks)**

c. With diagram, explain real time stack and application stack. **(04 Marks)**

7 a. Analyze the basic flow of control construct in, (i) Constant time statements (ii) Sequence of statements (iii) For loops (iv) While loops. **(08 Marks)**

b. Explain the 3 methods used to compute time loading. **(08 Marks)**

c. What is a co-routine? Explain. **(04 Marks)**

8 a. Explain a typical memory map with diagram and explain the design of memory map with reference to memory loading. **(08 Marks)**

b. Explain caches and their performance. **(08 Marks)**

c. Write explanatory note on hardware accelerators. **(04 Marks)**

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