Seventh Semester B.E. Degree Examination, Aug./Sept.2020

Embedded System Design

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. What is an embedded system? Explain briefly the various components in a microprocessor based embedded system with a block diagram. **(10 Marks)**

   b. With necessary block diagram, explain the embedded system life cycle. Mention the important steps in developing a embedded system. **(10 Marks)**

2 a. Compare Truncation and Rounding errors. Also analyze how errors propagate under addition and multiplication process. **(10 Marks)**

   b. Explain indexed mode and program counter relative addressing modes with diagram. Also write the timing diagram for serial and parallel write operation with an 8 bit register. **(10 Marks)**

3 a. With diagram, explain the operation of SRAM. With timing diagram explain read and write operation. **(10 Marks)**

   b. Explain Direct mapping cache implementation with diagram. **(06 Marks)**

   c. Explain dynamic memory allocation with its schemes. **(04 Marks)**

4 a. Discuss system specifications versus system requirements. **(06 Marks)**

   b. With a neat diagram, explain the waterfall life cycle model. **(07 Marks)**

   c. With a neat diagram, explain the spiral life cycle model. **(07 Marks)**

PART – B

5 a. With a neat diagram, explain operating system virtual machine model and typical high level operating system architecture. **(10 Marks)**

   b. Explain the various types of stacks. **(10 Marks)**

6 a. What is the difference between foreground and background task? **(04 Marks)**

   b. What are the major components of a operating system? Briefly describe the responsibility of each. **(10 Marks)**

   c. Explain the different kinds of stacks used in an embedded system application. **(06 Marks)**

7 a. Explain Amdahl's law with an example of non causal system. **(06 Marks)**

   b. Give the significance of Big – O – notation. **(06 Marks)**

   c. Explain time loading and memory loading. **(08 Marks)**

8 a. What is the purpose of complexity analysis? Explain the methodology of complexity analysis. **(10 Marks)**

   b. Explain the common mistakes that might be made during a performance optimization analysis. **(10 Marks)**

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