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10CS72

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

Time: 3 hrs.

Max. Marks:100

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

PART - A

1   a.   What is an embedded system? Differentiate between a general purpose computer and an embedded system. **(04 Marks)**
    b.   Explain the design of a requirement form for the beginning of project. **(08 Marks)**
    c.   Discuss various challenges in embedded computing system design. **(08 Marks)**

2   a.   Differentiate between:
        i)   Cache hit and cache miss with a neat diagram.
        ii) LDRH and LDRB of ARM instructions. **(04 Marks)**
    b.   What is an interrupt? Explain the mechanism of interrupt vectors with a neat diagram. **(08 Marks)**
    c.   Write ARM assembly code to implement the following C statement:
        $Z = (a << 2) | (b \& 15)$. **(04 Marks)**
    d.   What is pipeline? Explain the stages in an ARM pipeline. **(04 Marks)**

3   a.   Explain the following terms: i) Bus master;   ii) Four-cycle handshake protocol; iii) Components/signals on a bus; iv) DMA. **(12 Marks)**
    b.   Explain, how bridge can be used to connect different speeds systems. **(08 Marks)**

4   a.   Explain three techniques used in loop optimization. **(10 Marks)**
    b.   Explain the role of assembles and links in the compilation process with a neat diagram. **(07 Marks)**
    c.   What is dead code elimination? Explain. **(03 Marks)**

PART – B

5   a.   What is a process? What is Kernel? Explain any three services of the Kernel in an operating system. **(08 Marks)**
    b.   Compare thread v/s process. **(07 Marks)**
    c.   Define the following terms: i) CPU utilization; ii) Throughput; iii) Turnaround time; iv) Waiting time; v) Response time. **(05 Marks)**

6   a.   Explain the working of a shared memory communication system with a neat diagram. **(08 Marks)**
    b.   List various assumptions done during the evaluation of operating system performance. **(04 Marks)**
    c.   Explain the following with respect to IPC: i) signals; ii) mail-boxes. **(08 Marks)**

7   a.   With a neat diagram, explain CAN data frame format. **(10 Marks)**
    b.   Explain the basic format of an IP packet. **(10 Marks)**

8   Explain the following file types generated during cross-compiling/assembling:
        i)   . obJ File
        ii)   . Map File
        iii) . Hex File
        iv)   . lst File. **(20 Marks)**

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