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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec. - 2014

ARM Based System Design

Time: 3 hrs *Max. Marks: 100*

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

PART - A

1. a. Briefly explain the AMBA bus Protocol. 7

   b. Discuss the concept of Pipeline in ARM Processor. 8

   c. Write a short note on ARM processor families. 5

2 a. Explain the different data processing instructions in detail with suitable example. 14

   b. With an example explain the concept of saturated arithmetic. 6

3 a. Bring out the salient features of profiling and cycle counting in ARM simulator. 5

   b. With an example of your choice explain the concept of unrolled counted loops. 8

   c. With a suitable example explain how to handle unaligned data in ARM architecture. 7

4 a. Explain the three stages of the logarithm calculation in detail. 10

   b. Explain in detail how to calculate unsigned 32\32-bit divide by Newton-Raphson method. 10

PART - B

5 a. With a neat diagram, explain the non nested interrupt handler. 10

   b. Briefly explain exception priorities. 5

   c. Write a short note on vector table. 5

6 a. Explain the concept of measuring Cache efficiency. 6

   b. Discuss the Cache line replacement policies and explain any one briefly with a suitable example. 8

   c. Explain the cleaning process for the D-Cache using the Test clean command. 6

7 a. How do we set the region cache and write buffer attributes? Briefly explain. 8

   b. Explain region assignment using a memory Map with a suitable example. 8

   c. Write short notes on memory organization in a virtual memory system. 4

8 a. With a help of neat circuit diagram explain the following:

   (i) Single-step page table walk 12

   (ii) Two-step page table walk.

   b. Briefly explain the Fast context switch Extension (FCSE) with a suitable example. 8

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