ONE TIME EXIT SCHEME

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10CS74

Seventh Semester B.E. Degree Examination, April 2018
Advanced Computer Architecture

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Define computer Architecture and explain the seven dimensions of ISA. **(10 Marks)**

b. Find the number of dies per 300mm wafer of circular shape that is used to cut a die that is 1.5cm on side and compare the result with value 1.25. **(04 Marks)**

c. Explain the quantitative principles of computer design. **(06 Marks)**

2 a. Explain Classic 5 stage pipeline in RISC processors. **(10 Marks)**

b. List and explain the major handles in pipeline. Illustrate hazards with examples. **(10 Marks)**

3 a. List and explain the different types of dependencies with example. **(08 Marks)**

b. With an appropriate example explain Rescheduling and loop unrolling. **(08 Marks)**

c. With the neat sketch explain dynamic branch prediction. **(04 Marks)**

4 a. Explain Tomasulo algorithm for extended support speculation. **(10 Marks)**

b. Explain the basic VLIW approach. List the drawbacks. **(10 Marks)**

PART – B

5 a. With neat sketch explain the basic structure of centralized shared memory architectures and distributed memory multiprocessors. List the advantages and disadvantages. **(10 Marks)**

b. Explain the basic schemes for enforcing coherence. **(10 Marks)**

6 a. With neat sketch explain the hypothetical memory hierarchy. **(05 Marks)**

b. Explain the three block replacement strategies when cache miss occurs. **(06 Marks)**

c. Explain the six basic cache optimization techniques. **(09 Marks)**

7 a. Briefly explain the eleven advanced cache optimization techniques. **(11 Marks)**

b. Write a note on protection of virtual memory and protection with virtual machines. **(09 Marks)**

8 a. Explain in detail the hardware support for preserving exception behavior during speculation. **(10 Marks)**

b. Write a note on :

i) IA – 64 register models

ii) The Itanium 2 processor. **(10 Marks)**

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.