KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

SCT206: COMPUTER ARCHITECTURE

DATE: WEDNESDAY, 11TH APRIL 2012 TIME: 2.00 P.M. – 4.00 P.M.

Instruction:

ANSWER, QUESTION ONE(1) AND ANY OTHER TWO (2) QUESTIONS.

QUESTION ONE

(a) Explain the pipeline Stalling process**.** [2 marks]

(b) What is catch Memory. [2 marks]

(c) Describe the function of Cu(control unit). [3 marks]

(d) What are the basic operations of computer. [2 marks]

(e) What are the steps of executing Programs. [3 marks]

(f) Draw all the dependencies of Data dependency graph. [4 marks]

(g) Describe the Bus and all System Buses. [4 marks]

(h) What is System software .give an example [2 marks]

(i) Differentiate between the following

1. Multitasking and Multiprocessing
2. Simd and Mimd
3. Assembler and loader
4. General purpose register and Stack register [8 marks]

QUESTION TWO

(a) Explain the main idea behind DMA [4 marks]

(b) Clearly explain the hierarchical organization of the computer's memory in terms of increasing capacity and speed. [8 marks]

(c) Suppose that we have two implementations of 10,000 instruction set on each machine. Machine A has a clock cycle time of 50 s and a CPI of 4.0 for some program, and machine B has a clock cycle of 65 s and a CPI of 2.5 for the same program. Which machine is faster and by how much? [8 marks]

QUESTION THREE

(a) With the help of a well-labeled diagram describe basic organization of the VON NEUMANN machine. [8 marks]

(b) Draw a diagram showing Micro programmed computer Hardware configuration. [8 marks]

(c) Describe the CPU registers. [4 marks]

QUESTION FOUR

(a) (i) What is the difference between Microprocessor and Micro program?

(ii) Is it possible to design a microprocessors without a micro program?

(iii) Are all micro programmed computers also microprocessors?

[6 marks]

(b) Define Addressing mode .classify addressing mode and explain each type with example. [8 marks]

(c) Discuss the concept of memory Interleaving and give its advantage. [6 marks]

QUESTION FIVE

(a) Describe the any **four** Parallel Programming model [8 marks]

(b) Describe the Language Features of Parallelism. [6 marks]

(c) Draw a diagram showing the Four stage Pipelining (Software and Hardware Approach) execution. [6 marks]

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