

CRAWFORD UNIVERSITY

Faith-City, Igbesa, Ogun State

College of Natural and Applied Sciences

B.Sc.(Hons) Computer and Mathematical Sciences Degree Examination

Rain Semester 2016/2017 Session

COURSE TITLE: Computer Architecture COURSE CODE: CSC 418

Time allowed: 2hrs:30mins

Instruction: Answer ANY Four questions

Course Unit: 3 units

QUESTION ONE

- A) What are registers? (2mrk)
- B) Describe, in detail, the following registers: i) MAR ii) ACC (6 marks)
- C) Explain three (3) important parameters to be considered in choosing a computer memory (3mrks)
- D) Discuss Flynn's taxonomy in classifying parallel computer systems (4mrks)

QUESTION TWO

- A) What is Parallel Computing? (3mrks)
- B) Why are post increment addressing modes often found on processors that need to have a very short cycle time? (2mrks)
- C) With the aid of a block diagram, describe the pipelining stage for five (5) instructions (5mrks)
- D) Briefly explain Instruction level Parallelism. (5mrks)

QUESTION THREE

- A) Differentiate between RISC and CISC Architecture (5mrks)
- B) Briefly explain the major pipelining hazard (3mrks)
- C) Explain Von Neumann Architecture. State the main bottleneck of Von Neumann Architecture (5mrks)
- D) Itemize two (2) factors that have to be taken into account whenever the performance of a computer system is to be determined (2mrks)

QUESTION FOUR

- A) With an illustrated diagram, describe memory hierarchy. (5mrks)
- B) Briefly discuss how the hardware control unit of a computer system is designed. (5mrks)
- C) Briefly discuss the history of microprocessor (2mrks)
- D) Explain the two (2) principles of locality (3mrks)

QUESTION FIVE

- A) What is computer bus? (2 mrks)
- B) Describe the typical block diagram of a microcomputer showing common bus. (5mrks)
- C) Explain interrupt handling. (3mrks)
- D) Differentiate between device polling and vector Interrupt (5mrks)

QUESTION SIX

- A) What is trap? (2mrks)
- B) In tabular form, differentiate between serial and parallel computing (5mrks)
- C) Why is parallel computing commonly employed today? (4mrks)
- D) Briefly discuss vector processor and give four (4) reasons why they are expensive.(4mrks)

QUESTION SEVEN

- A) Explain a typical instruction execution cycle (3mrks)
- B) Explain Amdahl's Law. Why are benchmark programs and benchmark suites used to measure computer performance? (5mrks)
- C) What is virtual memory? List two (2) advantages of virtual memory (4mrks)
- D) Mention three (3) areas of applications of parallel computing. (3mrks)