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University Examinations 2013/2014

FIRST YEAR, SECOND SEMESTER, EXAMINATION FOR THE DEGREE OF BACHELOR
OF MATHEMATICS AND COMPUTER SCIENCE

ICS 2101: COMPUTER ORGANIZATION

DATE: APRIL 2014

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) With a block diagram, explain the organization of a control unit. (6 marks)
- b) Distinguish between computer architecture and computer organization giving examples. (6 marks)
- c) Define the term interrupt. Explain various types of Interrupts in detail. (6 marks)
- d) Explain the performance effect of bus width to a computer system. (6 marks)
- e) Discuss the concept of virtual memory. (6 marks)

QUESTION TWO (20 MARKS)

- a) Discuss two hard disk interface standards. (5 marks)
- b) Briefly explain Von-Neumann architecture for computers. (5 marks)
- c) Explain major characteristics of PCI bus. (5 marks)
- d) Define pipelining? Explain instruction pipelining in detail. (5 marks)

QUESTION THREE (20 MARKS)

- a) Explain the cache memory. (1 mark)
- b) Draw memory hierarchy and explain all types of memory. (5marks)

- c) Differentiate between programmed i/o and interrupt driven I/O and state how each affects the performance. (5 marks)
- d) Write short notes on the following:
 - i. Parallel processing (3 marks)
 - ii. Compilers (3 marks)
 - iii. Interpreters (3 marks)

QUESTION FOUR (20 MARKS)

- a) What are the causes of system complexity in CISC architecture? (4 marks)
- b) How is paging different from segmentation in memories? (2 marks)
- c) With the aid of a diagram, explain the need and the process by which the physical address changes to logical address and vice-versa. (5 marks)
- d) Compare and contrast different types of associative memories. (5 marks)
- e) Explain the following:
 - i. CMOS (4 marks)
 - ii. POST (2 marks)

QUESTION FIVE (20 MARKS)

- a. Convert octal number 327 to decimal. (2 marks)
- b. Explain the basic concept of RAID and its potential contribution to reliability and performance. (3 marks)
- c. Analyse DMA operation in regard to data transfer in an I/O module. (5 marks)
- d. Discuss software polling and bus arbitration as methods of servicing interrupts. (5 marks)
- e. Explain the error detection and correction in memory using parity bits technique. (5 marks)