



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 205: COMPUTER ARCHITECTURE

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Date: DECEMBER 2018

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) Modern computers are based on the Von Neumann architecture. Using a well labelled diagram, illustrate the main subsystems of the von Neumann computer **[6 marks]**
- b) Describe any 2 of the subsystems listed above **[6 marks]**
- c) The instruction set of a computer determines the types of applications that run on that machine the most notable instructions sets are CISC, EPIC and RISC. Describe the RISC and CISC architectures with a view of differentiating the TWO architectures. **[8 marks]**
- d) Define the term form factor and describe ANY 2 motherboard form factors you are familiar with. **[6 marks]**
- e) There are a number of technological developments aimed at improving the performance of a computer system. Describe how pipelining improves the performance of a computer system. **[4 marks]**
- Q2. Describe the contribution of the following technologies towards improving the performance of a computer system
- a) Registers **[5 marks]**
 - b) Multiprocessing **[5 marks]**
 - c) Virtue memory **[5 marks]**
 - d) Data bus **[5 marks]**

- Q3. a) Describe the role(s) of the fetch and store memory operations **[6 marks]**
- b) What technological differences exist between the Pentium 4 and the duo core processors. **[6 marks]**
- c) Using valid examples differentiate the external bus and the internal bus of a computer system. **[8 marks]**
- Q4. a) “The RAID technology plays a great role in fault tolerance both from a hardware and software perspective”. Using examples, you are familiar with, justify this statement **[15 marks]**
- b) In what computing environment would you advice the use of SCSI **[5 marks]**
- Q5. a) Describe the importance of disk partitioning. **[8 marks]**
- b) Describe the following computer components and comment on how they affect the performance of a computer system. **[12 marks]**
- i) Processor
 - ii) Memory
 - iii) Cache
 - iv) Hard disk

END