THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

JANUARY – APRIL 2019 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 205: COMPUTER ARCHITECTURE

Date: APRIL 2019	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1. a) Define the following terms
- i) Computer Architecture…… **(1mark)**
- ii) Computer Organization..... **(1mark)**

b) With regard to the functional view, illustrate the Von Neumann model with its major components…… **(5marks)**

c) Briefly explain the following terms with regard to Computer Architecture
- i) Central Processing Unit
- ii) Data
- iii) Cache Memory……. **(6marks)**

d) With examples briefly explain any two input and output computer devices…… **(4marks)**

e) With regard to Moore's Law, give a brief history of Computer ……**(3marks)**

f) Identify and explain 3 main computer functions ..... …… **(6marks)**

g) Explain any 4 types of semi-conductor memory.....**(4 marks)**

Q2. a) Briefly outline the characteristics of the Cache memory…… **(5marks)**

b) Explain two approaches of dealing within multiple interrupts…….. **(2marks)**

c) Why were transistors preferred to the vacuum tubes? Briefly explain the favorable characteristics… **(3marks)**

d) Outline the key functions of an Operating system with regard to Computer Architecture…... **(5marks)**

e) Identify and explain at least 2 functions of the Control Unit..... **(5marks)**

Q3. a) With the aid of a diagram explain how program execution is achieved by the computer components..... **(10marks)**

b) Explain the main function of input/output devices……. **(3marks)**

c) Explain 3 major types of external memory…. **(3marks)**

d) Identify 2 functions of the ALU and list its 2 possible inputs and outputs.....

(4marks)

Q4. a) Use Computer Arithmetic to elucidate: 10010011/1011…….... **(3marks)**

b) Define an Instruction set. What are the elements of an instruction set? …….

(5marks)

c) What is an interrupt handler?……. **(2marks)**

d) Outline and explain 4 types of operations that can be carried out in computer instruction sets……. **(4marks)**

e) Describe the various parameters that affect the performance of a computer..... **(6marks)**

Q5. a) Identify and explain any 5 types of addressing modes in Computer instruction sets…... **(10marks)**

b) With the help of a diagram explain the Data flow (Fetch diagram) with regard to instruction cycle in the CPU structure …… **(5marks)**

c) What is RAID? Explain some of the levels of RAID..... **(5 marks)**

END