ALUPE UNIVERSITY COLLEGE
Bastion of Knowledge
P. O.Box 845-50400 Busia(K)
principal@auc.ac.ke
Tel: +254 741 217 185
+254 736 044 469
off Busia-Malaba road
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2018 /2019 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION

MAIN EXAMINATION

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: **COM 221**

COURSE TITLE: **COMPUTER ORGANIZATION**

DATE: 24th April, 2019 **TIME: 2:00PM-5:00PM**

INSTRUCTION TO CANDIDATES

- **SEE INSIDE**

THIS PAPER CONSISTS OF 4 PRINTED PAGES **PLEASE TURN OVER**

COM 221: COMPUTER ORGANIZATION

STREAM: BSc (Computer Science) **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i. *Answer **ALL** questions from section A and any **THREE** from section B.*

ii. *Maps and diagrams should be used whenever they serve to illustrate the answer.*

iii. *Do not write on the question paper.*

SECTION A (24 MARKS) COMPULSORY

QUESTION ONE [12 MARKS]

a. State three different addressing modes performed on operands. **[3 marks]**

b. The computer memory is divided into Volatile Memory and Non-Volatile Memory. Contrast between them. **[2 marks]**

c. Name three forms of magnetic storage in modern computers. **[3 marks]**

d. Name the different major parts of the Central Processing Unit and briefly describe their functions. **[4 marks]**

QUESTION TWO [12 MARKS]

a. Describe different types of synchronous counters. **[3 marks]**

b. Arithmetic Logic Unit performs different operations. Identify hence explain them. **[1 mark]**

c. Outline the Input/ Output interfaces for an input device. **[3 marks]**

d. Define system Bus? **[2 marks]**

e. Clearly explain how the sequencer in the control memory functions. **[3 marks]**

SECTION B [36 MARKS]

QUESTION THREE [12 MARKS]

a. Differentiate between general purpose register and special purpose register **[4 marks]**

b. The Central Processing Unit has different special purpose registers performing different duties. Classify the special purpose registers and state the function of each **[4 marks]**

c. The Arithmetic Logic Unit enables the computer to perform both addition and subtraction of numbers. Give a detailed demonstration of how it performs a subtraction operation (B - A). **[4 marks]**

QUESTION FOUR [12 MARKS]

a. Justify why the computer memory address increments by four (4) from zero (0) i.e. 0, 4, 8, … **[4 marks]**

b. The Central Processing Unit has two major blocks. State and briefly explain the function of each block. **[2 marks]**

c. Name three different types of data paths organization in the CPU hence explain their operation **[6 marks]**

QUESTION FIVE [12 MARKS]

a. State the functions of the logic unit of the Arithmetic Logic unit. **[2 marks]**

b. Outline two major functions performed by Input/ Output modules. **[2 marks]**

c. The instruction cycle process is made possible by many different elements in the computer. Describe all the components involved in the instruction cycle and their functions. **[8 marks]**

QUESTION SIX [12 MARKS]

a. The function of the computer storage unit is to store data. Describe the different modes of data stored. **[3 marks]**

b. Describe the term cache memory. **[3 marks]**

c. The control unit is an important component within the Central Processing Unit. Outline the functions it performed to make the computer perform different duties. **[6 marks]**

QUESTION SEVEN [12 MARKS]

a. State the two types of control units hence explain the difference between them. **[4 marks]**

b. Define the term cache miss. **[2 marks]**

c. Cache misses can be characterized as one of the following: compulsory misses, capacity misses, and conflict misses. Describe each of them and how each of these kinds of misses can be addressed in the hardware. **[6 marks]**