MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 201: COMPUTER ORGANIZATION AND ARCHITECTURE II

DATE: 22/7/2019 **TIME: 8.30-10.30 AM**

INSTRUCTIONS

Answer **question ONE and any other TWO questions.**

QUESTION ONE (COMPULSORY)

(a) Explain any four types of addressing modes **(8 Marks)**

(b) Discuss Flynn's classification of Computer **(8 Marks)**

(c) Explain the various instruction types with examples **(9 Marks)**

(i) Data transfer

(ii) Data processing

(iii) Program control instruction

(d) Discuss a three bus structure of processor organization using relevant example **(5 Marks)**

QUESTION TWO

a) Describe I/O Module including relevant diagrams **(12 Marks)**

b) Using a RAM organization diagram, Explain a 7 bit data and 4 bit address memory .**(8 Marks)**

QUESTION THREE

a) Explain fundamental issues in instruction set design **(5 Marks**

b) Discuss instruction cycle state diagram including interrupt using relevant example **(9 Marks)**

c) A computer has 8GB of memory. Each word in the computer is 16 bytes. Calculate the number of bits required to address any single word. **(4 Marks)**

QUESTION FOUR

a) Draw a diagram of a functioning microprogrammed unit **(5 Marks)**

b) Define registers and explain register transfer language **(5 Marks)**

c) Given $A=54_{10}$, $B=77_8$

i. Compute A-B in 2's complement, is it overflow ? why or why not ? **(5 Marks)**

ii. Using diagram of full adder explain ALU operation for the arithmetic in (ii) **(5 Marks)**

QUESTION FIVE

a) Discuss a zero address machine by using example below **(8 Marks)**

$$Y = \frac{A - B + C}{G + H}$$

.

b) Briefly discuss the major steps followed in designing a computer. **(8 Marks)**

c) Differentiate between RISC and CISC **(4 Marks)**