(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)
UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

SUPPLEMENTARY/SPECIAL EXAMINATIONS
SECOND YEAR SECOND SEMESTER
FOR THE DIPLOMA IN

(INFORMATION TECHNOLOGY)

COURSE CODE: DIT 075

COURSE TITLE: COMPUTER ORGANIZATION AND ARCHITECTURE

DATE: 09/08/2023   **TIME: 8.00 AM – 10.00 A.M**

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSARY) [24 MARKS]

a. Convert the following to decimal [4 marks]

   i. 10010011_2

   ii. $02CA_{16}$

b. State four main components of a computer and give the functions for each [8 marks]

c. Distinguish between General purpose computers and special purpose computers

[2 marks]

d. Briefly discuss the following terms as used in computing. [8 Marks]

   i.   PROM

   ii.   EPROM

   iii. Cache Memory

   iv. Virtual memory

e. Explain the function of input/output system [2 marks]

QUESTION TWO [18 MARKS]

a. Add 01001111_2 to 01100011_2 using signed-magnitude arithmetic [3 marks]

b. Convert 110010011101_2 to octal and hexadecimal [4 marks]

c. Name the characteristic present in Neumann architecture. [3 marks]

d. Discuss two types of computer memory [4 marks]

e. Discuss how the fetch-decode-execution cycle work. [4 marks]

QUESTION THREE [18 MARKS]

a. What is an ISA? [3 marks]

b. Briefly discuss characteristics of the MARIE architecture. [8 Marks]

c. Identify and describe MARIE's seven registers. [7 Marks]

QUESTION FOUR [18 MARKS]

a. Explain interrupts in computer system [3 marks]

b. An interrupt can be triggered for a variety of reasons, highlight any FIVE [5 marks]

c. Briefly explain the role of the following components. [10 Marks]

   i.   Registers.

   ii.   ALU.

iii.   Control Unit.

iv.   Buses.

v.   Clocks

QUESTION FIVE [18 MARKS]

a) Explain five functions of an operating system   [10 Marks]

b) There are five basic different types of ROM, discuss FOUR   [8 marks]