(18)

(*Knowledge for Development*)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER TWO EXAMINATIONS

FOR DIPLOMA
(INFORMATION TECHNOLOGY)

COURSE CODE : DIT 075

COURSE TITLE : COMPUTER ORGANIZATION AND ARCHITECTURE

DATE: 20/05/2019 **TIME: 9.00AM-11.00AM**

INSTRUCTIONS TO CANDIDATES

ANSWER **QUESTIONS ONE AND ANY OTHER TWO.**

KIBU observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

QUESTION ONE (COMPULSORY) [24 MARKS]

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

i. Registers.
ii. ALU.
iii. Control Unit.
iv. Buses.
v. Clocks.

b. Briefly discuss the following terms as used in computing. **[3 Marks]**

i. PROM (Programmable Read Only Memory) –
ii. EPROM (Erasable Programmable Read Only Memory) –
iii. Cache Memory -

c. Perform the following conversions **[6 Marks]**

i. convert the decimal number to octal number 172.878
ii. Convert the hexadecimal number to decimal number ***DEF***

Giving appropriate examples define input/output. **[5 Marks]**

QUESTION TWO [18 MARKS]

a. Create truth tables for the Boolean operators OR, AND, and NOT. **[8 Marks]**
b. Generate truth table for $F(X, Y, Z) = X\,Y + Y\,Z$ **[4 Marks]**
c. Add 01001111_2 to 01100011_2 using signed-magnitude arithmetic. **[6 Marks]**

QUESTION THREE [18 MARKS]

a. The next consideration for design architecture concerns how CPU will store data. What three choices do we have? **[3 Marks]**
b. According to what are instruction set architectures measured? **[4 Marks]**
c. Explain three reasons an instruction set may stall or be flushed. **[3 Marks]**
d. Discuss two ways in which instructions can be formatted? **[4 Marks]**
e. Explain what the CPU should do when an interrupt occurs. Include in your answer the method the CPU uses to detect an interrupt, how it is handled and what happens when the interrupt has been serviced. **[4 Marks]**

QUESTION FOUR [18 MARKS]

a. Convert 110010011101_2 to octal and hexadecimal. **[6 Marks]**
b. Add 01001111_2 to 01100011_2 using signed-magnitude arithmetic. **[6 Marks]**
c. Perform the following conversions **[6 Marks]**

iii. convert the decimal number to octal number 172.878
iv. Convert the hexadecimal number to decimal number ***DEF***

QUESTION FIVE [18 MARKS]

a. Define the following terms as used in computer memory. **[5 Marks]**

i. Virtual address
ii. Physical address
iii. Mapping
iv. Page frames
v. Pages

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

iv. PROM
v. EPROM
vi. Cache Memory
vii. Virtualmemory

c. Describe the following terminologies as used when referring to memory hierarchy. **[5 Marks]**

i. Hit
ii. Miss
iii. Hit rate
iv. Miss rate
v. Hit time