



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTAR EXAMINATIONS
YEAR TWO SEMESTER ONE EXAMINATIONS**

**FOR DIPLOMA
(INFORMATION TECHNOLOGY)**

**COURSE CODE : DIT 075
COURSE TITLE : COMPUTER ORGANIZATION
AND ARCHITECTURE**

DATE: 05/02/2021 TIME: 8.00 A.M. – 10.00 A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSARY) [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. [9 Marks]
- b. With appropriate examples, explain the term input /output [4 Marks]
- c. Explain any three registers found in a microprocessor system. [6Marks]

QUESTION THREE [18 MARKS]

- a. Explain Five functions of an operating system [10 Marks]
- b. Explain the following terms in relation to software
- i. Portability
 - ii. Efficiency
 - iii. Protected
 - iv. Deadlock
- [8 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]
- i. convert the decimal number to octal number 172.878
 - ii. 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 | iv. Page frames |
| ii. Physical address | v. Pages |
| iii. Mapping | |
- b. Briefly discuss the following terms as used in computing. [8 Marks]
- | | |
|-----------|--------------------|
| i. PROM | iii. Cache Memory |
| ii. EPROM | iv. Virtual memory |
- c. Describe the following terminologies as used when referring to memory hierarchy. [5 Marks]
- | | |
|---------------|---------------|
| i. Hit | iv. Miss rate |
| ii. Miss | v. Hit time |
| iii. Hit rate | |