

**UNIVERSITY**

**KABARAK**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**FIRST SEMESTER, 2018/2019 ACADEMIC YEAR**

**EXAMINATION FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**BACHELOR OF BUSINESS MANAGEMENT IN INFORMATION TECHNOLOGY**

**BACHELOR OF INFORMATION TECHNOLOGY**

**COMP 226: COMPUTER ORGANIZATION AND ARCHITECTURE**

**STREAM: BSC CS Y2S2/IT Y2S1 TIME:** 2 HRS

**EXAMINATION SESSION: APRIL YEAR:** 2019

**INSTRUCTIONS**

1. **Question One is COMPULSORY.**
2. **Attempt any other TWO Questions from the remaining section.**
3. **Do not write on the question paper**
4. **Show your working clearly**

**SECTION A (30 MARKS)**

**QUESTION ONE (30 MARKS)**

1. Define the term Cache memory (2 Marks)
2. Write brief notes on three (3) broad categories of computer programming languages (3 Marks)
3. Explain two primary objectives of Operating System (4 Marks)
4. Describe two (2) types of number systems (4 Marks)
5. Work out the following (4 Marks)

|  |  |  |  |
| --- | --- | --- | --- |
| DECIMAL | BINARY | OCTAL | HEXA-DECIMAL |
| 36.4 |  |  |  |
|  | 110.1101 |  |  |
|  |  | 3.04 |  |
|  |  |  | A.73 |

1. With the aid of a well labeled diagram explain the architecture of a Microprocessor Based System. (4 Marks)
2. The CPU has two general types of registers; explain them with their examples in detail. (4 Marks)
3. Write the product of sums equivalent of the following Boolean expression and do the following.

**F = B’D’+B’C+A’CD’**

1. Draw the logic gate diagram from the sum of product expression
2. Draw the logic gate diagram for the product of sums expression
3. Draw the truth table for both expressions (5 Marks)

**QUESTION TWO (20 MARKS)**

1. State 2 limitations of the primary storage (4 Marks)
2. Showing your workings convert the fractional decimal number 6.62510to binary number (4 Marks)
3. Explain the benefits of using in computer system the binary numbers rather than decimal numbers (6 Marks)
4. Showing your workings divide the binary number 100012 by 1102  (6 Marks)

**QUESTION THREE (30 MARKS)**

1. Simplify the following expression using boolean algebra. (2 Marks)

AB+A(CD+CD’)

1. Given the boolean function (8 Marks)

f=xyz’+x’y’z+xyz

1. List the truth table for the function
2. Draw the logic gate for the original Boolean expression
3. Simplify the expression using Boolean algebra
4. Draw the logic gate diagram for the simplified expression

**QUESTION FOUR (20 MARKS)**

1. State six (6) factors that determine the choice of the programming language (6 Marks)
2. Write brief notes on three (3) broad categories of computer programming languages (4 Marks)
3. Write brief notes about the two components of central processing unit (4 Marks)
4. State three (3) variables/parameters that form Boolean functions (6 Marks)

**QUESTION FIVE (20 MARKS)**

(a) Explain the meaning of the following terms within the context of computer systems

i) Peripherals devices (1 Mark)

ii) Virtual storage (1 Mark)

iii) ROM BIOS (2 Marks)

iv) Co-Processor (2 Marks)

v) Motherboard (1 Mark)

(b)

i) What is a system bus? (3 Marks)

ii) Explain the three major components of a system bus. (3 Marks)

(c) Briefly discuss THREE major file organization methods and for each explain the

access method applicable. (7Marks)