(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2019/2020 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: 10/11/2020   TIME: 2.00 P.M. – 5.00 P.M.

INSTRUCTIONS

ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE (COMPULSORY) [(24 MARKS]

a) Describe in your own words the understanding of computer architecture   **[2Marks]**

b) Describe the key characteristics of the memory system   **[2Marks]**

c) Discuss the history and evolution of Computer System   **[6Marks]**

d) Draw a Karnaugh map for five variables   **[5Marks]**

e) Describe in your own words The differences among sequential access, direct access, and random access.   **[9Marks]**

QUESTION TWO [18 MARKS]

a) What is a general-purpose machine?   **[2Marks]**

b) What are sequential circuits? How are they different from combinational circuits?   **[5Marks]**

c) Map the function having four variables in a Karnaugh's map. The function is $F(A,B,C,D) \sum(2,6,10,14)$.   **[5Marks]**

d) Describe the importance of cache memory and other high-speed memories.   **[6Marks]**

QUESTION THREE [18 MARKS]

a) Define the following terms   **[2Marks]**

    i. Binary decimal

    ii. Hexadecimal

b) Convert the following binary numbers to decimal   **[4Marks]**

    i. 1100,1101

    ii. 10101010

c) Convert the following decimal numbers to binary.   **[4Marks]**

    i. 23

    ii. 49.25

    iii. 892

    iv. 43.125

d) Convert the numbers given in question (b) to hexadecimal from decimal or from the binary.   **[4Marks]**

e) Write the BCD equivalent of the three numbers given in question (b).   [4Marks]

QUESTION FOUR [18 MARKS]

a) Describe in your own words the understanding of the following terms and provide several examples in illustrating explanation   [9Marks]

   i. General purpose of computer.

   ii. Special purpose computer.

   iii. What is a stored program computer?

QUESTION FIVE [18 MARKS]

a) Simplify the Boolean function bellow: [6Marks]

$$F = [(\overline{\overline{\overline{A}} + \overline{B}}) + (\overline{A + \overline{\overline{B}}})]$$

b) From the above function in (a) draw a logic diagram   [6Marks]

c) From the simplified function in (a) above draw a logic diagram   [6Marks]