KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

AND BACHELOR OF SCIENCE IN ECONOMICS

COURSE CODE: COMP 110

COURSE TITLE: INTRODUCTION TO COMPUTER SCIENCE

STREAM: Y1S1

DAY: FRIDAY

TIME: 9.00 – 11.00 A.M

DATE: 10/12/2010

INSTRUCTIONS:

- *Section A is compulsory*
- *Attempt other two questions from Section B*

PLEASE TURNOVER

SECTION A (30 Marks)

QUESTION ONE: (30 MARKS)

a) How is a computer important to the government?   **(5 Marks)**
b) What is an integrated circuit? List three benefits of an IC over a transistor.   **(5 Marks)**
c) Convert the following: -   **(6 Marks)**
   i. $(4706)_8 = (?)_{10}$
   ii. $(11001)_4 = (?)_{10}$
   iii. $(545)_6 = (?)_4$

d) Why have computers designed to use binary number system?   **(3 Marks)**
e) Explain the duality principle.   **(4 Marks)**
f) What is a cache memory? How does it differ with the primary memory?   **(5 Marks)**
g) List out four main uses of magnetic tapes.   **(2 Marks)**

SECTION B: (20 Marks each)
QUESTION TWO: (20 MARKS)

a) Solve the following: -   **(6 Marks)**
   i.   Using complementary method subtract $(100011)_2$ **from** $(010010)_2$
   ii.   Using complementary method subtract $(0111000)_2$ **from** $(1011100)_2$
   iii.   Multiply $(1010)_2$ **and** $(1001)_2$
b) Construct a logic circuit for the Boolean expression below: **(6 Marks)**
$$\overline{A.B} + C.D + \overline{E.F}$$
c) What is an OCR device? List out its main limitations.   **(4 Marks)**
d) What is a utility program? Explain three tasks commonly performed by utility software.
    (4 Marks)

QUESTION THREE: (20 MARKS)

a) Briefly explain the five common functions of an operating system.   **(5 Marks)**
b) Define the following terms: -   **(5 Marks)**
   i.   Track
   ii.   Turn round time
   iii.   Topology
   iv.   Computer network
   v.   modem

c) Using the method of perfect induction proof: **(5 Marks)**
$$x.(\overline{x} + y) = x.y$$
d) List out five hardware and software requirements for time sharing system.   **(5 Marks)**

QUESTION FOUR: (20 MARKS)

a) Differentiate between the transistor and the integrated Circuit technology. **(3 Marks)**

b) What is meant by the word – wrap feature in word processing? Explain its importance.

(4 Marks)

c) Why is digital transmission preferred to analog transmission for digital data? **(4 Marks)**

d) List four benefits of circuit switching. **(4 Marks)**

e) Explain five main features which differentiate the types of network. **(5 Marks)**