AFRICA NAZARENE

UNIVERSITY

CENTRE:	**NAIROBI**
DEPARTMENT:	**COMPUTER SCIENCE**
UNIT TITLE:	**FUNDAMENTALS OF COMPUTER SYSTEMS**
UNIT CODE:	**CSC 101**
TRIMESTER:	**1ST TRIMESTER 2015/2016**
LECTURER:	**M. KARANI**
DATE:	**8TH DECEMBER 2015**
TIME:	**5.30PM – 8.30PM**

Instructions:

1. Answer **ALL** Questions in **Section A (Compulsory)** and any **THREE** Questions in **Section B**.
2. Write all your answers in the answer booklet provided.
3. **DO NOT** write on the question paper.
4. Time allowed: Three Hours.

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SECTION A

1. Briefly explain any two differences between old generation computers and modern day computers of the 5th generation and beyond. **(2 marks)**
2. What is a transistor? **(1 mark)**
3. Briefly explain how a computer is able to understand other languages other than machine code. **(2 marks)**
4. What is the number system that is used by computers, what is the base of this number system? **(2 marks)**
5. Convert the decimal number 12 to the equivalent binary representation. **(2 marks)**
6. Convert the octal number 72 to the equivalent decimal number. **(2 marks)**
7. Briefly explain any two real world applications of computers. **(2 marks)**
8. Distinguish between data and information. **(2 marks)**
9. Briefly explain the role of the following computer parts: **(2 marks)**
   i) CPU
   ii) System unit
10. State any one difference between a laptop computer and a desktop computer. **(1 mark)**
11. Explain any one measure that can be taken to improve the performance of a computer. **(1 mark)**
12. Using a truth table explain the operation of an OR gate. **(2 marks)**
13. Draw a logic circuit that implements the logic function F=A.B+C **(2 marks)**
14. Apply distributive rules to the logic function in question 13 and get the new equivalent function. **(2 marks)**
15. Explain how a computer is able to represent data of various types including letters of the alphabet and numbers. **(2 marks)**
16. In computer data storage, what is a backup? **(1 mark)**
17. State one example of a computer input device, and one example of a computer output device. **(2 marks)**

SECTION B

Question One

a) Explain using examples the difference between system and application software. **(4 marks)**
b) Briefly explain the process of developing and running a computer program. **(3 marks)**
c) Briefly explain the difference between open source and copyrighted software. **(2 marks)**
d) What is software piracy? **(1 mark)**
e) State and briefly explain any two key features of word processing software. **(4 marks)**
f) What is a database? **(1 mark)**

Question Two

a) Explain using an example why it was necessary to introduce the octal number system in addition to the binary number for use in computers. **(2 marks)**
b) Using ones complement, show how the binary subtraction of the number 100 from the number 110 can be performed correctly. **(3 marks)**
c) Using twos complement, perform the same operation in (b) above. **(3 marks)**
d) Explain the justification for the use of twos complement. **(2 marks)**
e) Using an example, briefly explain the hexadecimal numbers system. **(3 marks)**
f) Why is it necessary to study computer number systems? **(1 mark)**
g) Explain how the binary digits '0' and '1' can be represented in a digital system. **(1 mark)**

Question Three

a) State any two computer storage media. Explain how data is stored. **(4 marks)**
b) What is a file? **(1 mark)**
c) If computers have random access memory (RAM), why is it necessary to employ other storage media? **(2 marks)**
d) Distinguish between sequential and random access. **(2 marks)**
e) Briefly explain any one measure that can be used to compare the performance of storage media. **(2 marks)**
f) What is RAID? Distinguish between RAID 0 and RAID 1. **(3 marks)**
g) What is a folder in file management? **(1 mark)**

Question Four

a) What is a programming language? Explain using an example **(2 marks)**
b) What is a flow chart and what role does it play in computer programming? **(3 marks)**
c) Why is it necessary for one to use a methodical approach when writing computer programs? **(2 marks)**
d) Distinguish between a compiler and an interpreter. **(3 marks)**
e) What is an algorithm? What purpose does it serve in computer programming? **(2 marks)**
f) Using pseudo code, write an algorithm for the development of a program that can compute the area of a rectangle. **(3 marks)**