ALUPE UNIVERSITY COLLEGE

Bastion of Knowledge.

OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2019 /2020 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

MAIN EXAMINATION

COURSE CODE: COM 211

COURSE TITLE: SYSTEM SOFTWARE

DATE: 30TH OCTOBER, 2020   **TIME: 9.00 AM – 12.00 NOON**

INSTRUCTION TO CANDIDATES

- **SEE INSIDE**

THIS PAPER CONSISTS OF PRINTED PAGES   PLEASE TURN OVER

REGULAR EXAMINATION

COM 211 SYSTEM SOFTWARE

STREAM: BSc (Computer Science)   **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i. *Answer **ALL** questions from section A and any **THREE** from section B.*

ii. *Maps and diagrams should be used whenever they serve to illustrate the answer.*

iii. *Do not write on the question paper.*

SECTION A (24 MARKS) COMPULSORY

QUESTION ONE [12 MARKS]

a. What is the main function of the system software?   **[2 marks]**

b. Explain the essence of having a language processing system.   **[3 marks]**

c. Elaborate why register R0 within the register file is a special register   **[2 marks]**

d. For a memory location to be accessed, we need a memory address register and a data register. Explain the reason for having both of them.   **[2 marks]**

e. The system kernel mediates access to different resources within the computer. Name three of these resources   **[3 marks]**

QUESTION TWO [12 MARKS]

a. Assembly language is more understood and readable by humans in comparison to machine language. Identify three features which make assembly language more human friendly compared to machine language.   **[3 marks]**

b. A program has to pass through a pre-processor before being compiled. Describe three functions performed by the pre-processor.   **[3 marks]**

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c. Outline three main activities performed by a loader. [3 marks]

d. Describe three user level views of an operating system [3 marks]

SECTION B [36 MARKS]

QUESTION THREE [12 MARKS]

a. Explain the difference between the instructions held by program counter and instruction register. [2 Marks]

b. Client-server computing system is a type of distributed operating system. Describe the features [4 marks]

c. An operating system enables a user to interact with the computer hardware parts without going into details of how it is done. Clearly explain the functions performed by the operating system. [6 marks]

QUESTION FOUR [12 MARKS]

a. Define the following terms with respect to the computer hardware-software interface.

 i. Hardware

 ii. Software [4 marks]

b. Explain the function of the computer hardware-software interface. [2 marks]

c. For an instruction stored in the computer memory to be implemented, it has to go through a series of steps. Describe in details the process involved up to when the instruction is executed [6 marks]

QUESTION FIVE   [12 MARKS]

a. Describe the two main language processing activities.   [2 marks]

b. A parser is an important element in converting high level language to low level language. Identify its main function.   [2 marks]

c. A novice programmer requests for your assistance to help out debugging a program after its compilation process has failed. As an expert in programming, describe the different kinds of errors you suspect could have caused the program not to be compiled and run.

[4 marks]

d. Contrast between the functions of a linker and a loader.   [4 marks]

QUESTION SIX [12 MARKS]

a. Define the term assembler.   [2 marks]

b. Outline two data structures used in the synthesis phase of an assembler.   [2 marks]

c. What is the function of the location counter in an assembler?   [2 marks]

d. Elaborate the three types of statements found in assembly language.   [6 marks]

QUESTION SEVEN [12 MARKS]

a. Utility software is part of the system software in the computer. State four activities it is responsible for which makes it a special software to the computer.   **[4 marks]**

b. Describe four different user views of the operating system.   **[4 marks]**

c. There are four main error-recovery strategies to deal with errors in a code. Briefly explain each one of them.   **[4 marks]**

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