CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF
MASTERS OF SCIENCE IN CHEMISTRY

CHEM 802: ADVANCED COMPUTER APPLICATIONS IN CHEMISTRY

STREAMS: MSC   **TIME: 3 HOURS**

DAY/DATE: WEDNESDAY 22/04/2020   **2.30 PM – 5.30 PM**

INSTRUCTIONS:

ANSWER ALL QUESTIONS

QUESTION ONE (20 MARKS)

(a)   Differentiate between analog and digital computers.   [3 marks]

(b)   Briefly explain the following terms as used in computer

      (i)   Control unit
      (ii)   Arithmetic and logic unit   [2 marks]

(c)   (i)   Define an output device   [1 mark]

      (ii)   Briefly discuss two output devices   [4 marks]

(d)   Using an example explain the term operating system.   [4 marks]

(e)   (i)   Briefly explain the two classification of operating system on the basis of their
             mode of interaction with their users.   [4 marks]

      (ii)   Give two operating systems functions.   [2 marks]

QUESTION TWO (20 MARKS)

(a)   Differentiate between the following   [10 marks]

       (i)   Primary and secondary storage
       (ii)   Read only memory (ROM) and programmable read only memory (PROM)
       (iii)   High-level and low-level languages
       (iv)   Multi-user and multi-processing operation
       (v)   Assembly language and machine language

(b)   Briefly explain the following terms   [4 marks]

       (i)   Progamming
       (ii)   Algorithm
       (iii)   Operand
       (iv)   Operator   [4 marks]

(c)   List two rules for constructing the following in C programming   [4 marks]

       (i)   Integer constants
       (ii)   Variable names

(d)   State four reasons for the popularity and success of UNIX operating system.
                                                                    [4 marks]

QUESTION THREEE (20 MARKS)

(a)   Discuss three major uses for computers in chromatographic instrumental method
       development.   [6 marks]

(b)   Using a slow chart show the procedure to be followed when calculating pressure from the
       van der Waal's equation   [5 marks]

(c)   (i)   Briefly explain the Huckel theory   [3 marks]

       (ii)   Give and explain the three assumptions of the Huckel theory   [6 marks]