

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
COMPUTER SCIENCE**

COSC 101: INTRODUCTION TO COMPUTER SCIENCE

STREAMS: BSC (COMPUTER SCIENCE)

TIME: 2 HOURS

DAY/DATE: TUESDAY 02/02/2021

2.30 P.M – 4.30 P.M.

INSTRUCTIONS

- Attempt **Question 1** and any other **TWO** from **SECTION B**
- Marks are awarded for clear and concise answers
- ONLY the first **THREE** Questions attempted will be marked (**Question One inclusive**)

SECTION A- COMPULSORY

Question ONE [30 Marks]

(a) For each category on the left in the table below, provide three examples on the right
[12 Marks]

Category	Examples
(i) Operating System	
(ii) Internet Protocols	
(iii) Application Software	
(iv) Storage device	

(b) Consider a decimal number -135. Write down this number using the following representations.

- i. 8-Bit one's complement [3 Marks]
- ii. 8-bit two's complement [3 Marks]
- iii. Octal equivalent [3 Marks]

(c) Name the following components in a computer system.

- (i) Circuit board which connects most of the other devices on a computer [2 Marks]

- (ii) It takes digital data from the computer system and turns it into visible images [2 Marks]
- (iii) It turns digital computer data into analogue audio signals [2 Marks]
- (d) Provide a definition of system utility software, and provide **TWO** examples of this type of software [3 marks]

SECTION B-Answer Only TWO Questions From this Section

Question TWO-20 Marks

- (a) Many things happen quickly between the time you turn on the computer and the time when it is ready for you to start using it. Briefly describe a four step boot process [8 Marks]
- (b) The *Internet* is vast network of networked computers that connects millions of computer users all over the world. There are two basic types of computers on the Internet: servers and clients.
- (i) While giving at least one example in each, describe the key function of each of these computers [6 Marks]
- (ii) Describe at least **FOUR** key requirements needed to get connected to the Internet [4 Marks]
- (iii) What precautions do you need to take to protect a computer connected to the internet against viruses [2 Marks]

Question THREE-20 Marks

- (a) Illustrate using a diagram the von Neumann architecture of a typical computer system [10 Marks]
- (b) Assume that you are working in a factory that manufactures computer related items. You have been assigned the responsibility of selecting appropriate storage for user in the factory. What criteria would you consider in evaluating storage for use by this company [10 Marks]

Question FOUR-20 Marks

- (a) Give **TWO** types of scanning devices that are used with computer systems [2 Marks]
- (b) Differentiate between the following concepts:
- (i) Computer Architecture and Computer organization [3 Marks]
- (ii) Primary memory and Secondary memory [3 Marks]
- (iii) Static RAM and Dynamic RAM [3 Marks]
- (c) Distinguish between the following input-output technologies
- (i) Liquid Crystal Display (LCD) Monitor and Thin Film Transistor (TFT) Monitor [3 Marks]
- (ii) Impact and non-impact Printers [3 Marks]
- (iii) Optical Mark Recognition (OMR) device and Magnetic Ink Character Recognition (MICR) device [3 Marks]

Question FIVE -20 Marks

(a) Describe **THREE** ways that digital computers can use to represent negative numbers **[6 Marks]**

(b) Consider the 8 bit unsigned binary numbers 11110010 and 01101111.

(i) What is the result (in 8 bit binary) of adding these two numbers **[3 Marks]**

(ii) What is the decimal representation of the resulting addition of the two binary values **[3 Marks]**

(iii) What is the decimal representation of the resulting addition if the two values are **signed** 8 bit values **[3 Marks]**

(iv) What is the binary representation of the result of subtracting the second from the first **[3 Marks]**

(v) What is the **OCTAL** representation of the resulting addition of the two binary values **[2 Marks]**
