

COSC 0101

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

CHUKA & EMBU

EXAMINATION FOR THE AWARD OF DIPLOMA
IN COMPUTER SCIENCE

COSC 0101: INTRODUCTION TO COMPUTER SYSTEMS

STREAMS: DIP. COMP. SCI

TIME: 2 HOURS

DAY/DATE: THURSDAY 01/04/2021

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A

QUESTION ONE (30 MARKS)

- Define the following terminologies in regard to memory:
 - Random access [2 marks]
 - Latency [2 marks]
- Using an illustrative diagram, describe the functional components of a programmable machine based on the von Neumann model [6 marks]
- Registers are essential in memory WRITE and READ operations. Highlight the steps involved to perform a WRITE operation into a specified memory location. [3 marks]
- Hardware and software are mutually dependent on each other. Both of them must work together to make a computer produce a useful output. Outline relationship between hardware and software. [2 marks]
- Perform the following operations (Show your working)
 - Add binary number 101110 to 111011. [2 marks]
 - Convert 47_{10} to binary. [2 marks]

- f. Using appropriate examples differentiate between Off-shelf software and Tailor-made software. [3 marks]
- g. Highlight four characteristics of first-generation computers. [4 marks]
- h. Explain the difference between the following terms.
 - i. System software and application software [2 marks]
 - ii. Random Access memory and Read Only memory [2 marks]

SECTION B

QUESTION TWO (20 MARKS)

- a. Explain the impact of computer systems and technology in society [10 marks]
- b. A computing system is said to be secure if it has confidentiality, integrity and availability. Explain five basic computer security practices. (10 marks)

QUESTION THREE (20 MARKS)

- a. A bus is group of lines that serves as a connection path for several devices. Explain three main types of system buses. (6 marks)
- b. Differentiate between SRAM and DRAM and with reasons state which one is suitable for making cache memory (4 marks)
- c. Explain three kinds of registers found in CPU. (6 marks)
- d. Explain two character coding schemes (4 marks)

QUESTION FOUR (20 MARKS)

- a. Denis is the head of ICT in Mwatate institution. He is required to purchase some computers by the institution. Explain five factors that he will consider when purchasing the computers. (5 marks)
- b. C.P.U main function is execution of instructions. Describe four main steps involved during the execution process. (8 marks)
- c. Convert: [6 marks]
 - i. 11.6_{10} to binary
 - ii. $F3A7C2_{16}$ to binary.
- d. How many bytes make one Gigabyte (GB). (1 mark)

QUESTION FIVE (20 MARKS)

- a. Explain five functions of an operating system in a computer system. (10 marks)
 - b. Distinguish the following terms in regard to computer processing.
 - i. Multiprogramming (2 marks)
 - ii. Multiprocessing (2 marks)
 - iii. Multitasking (2 marks)
 - iv. Multithreading (2 marks)
 - c. Highlight two major limitations of using the internet (2 marks)
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