061306T4CSC

COMPUTER SCIENCE LEVEL 6

ICT/OS/CS/CR/01/6/A

UNDERSTAND COMPUTER ORGANISATION AND ARCHITECTURE

NOV/DEC 2023

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION

COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

TIME: 3 Hours

INSTRUCTIONS TO CANDIDATE

1. *The paper consists of **two** sections: **A** and **B***

2. *Answer **ALL** questions in Section **A** and any **Three** from section **B***

3. *Marks for each question are indicated in the brackets*

4. *A separate answer booklet will be provided*

5. *Do not write on the question paper*

Candidates should answer the questions in English

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all pages

are printed as indicated and that no questions are missing

SECTION A: (40 Marks)

(Answer ALL the questions in this section)

1. Define the following terms as used in computer systems.

    (a) Cache memory: (2 Marks)

    (b) Virtual memory.   (2 Marks)

2. State TWO functions of computer system registers   (2 Marks)

3. Outline TWO ways in which instructions are represented in a computer system.

                                                                         (4 Marks)

4. Differentiate between computer organization and computer architecture.   (4 Marks)

5. Explain the purpose of BIOS in a computer system.   (2 Marks)

6. You are provided with a computer system and asked to identify the exact model and specifications of the CPU installed. Describe the tools or methods you would use to accomplish this task.   (3 Marks)

7. State TWO major components involved in input-output processing.   (2 Marks)

8. Explain the role of the bus interface in computer architecture   (2 Marks)

9. A photographer needs a new printer for high-quality photo printing. Advise them on the necessary specifications for the printer.   (3 Marks)

10. Define the term integer arithmetic   (2 Marks)

11. Describe the concept of programmable logic devices (PLDs) in representing logic operations.

                                                                         (2 Marks)

12. State the procedure of determining the number of cores in a computer system CPU.

                                                                         (2 Marks)

13. You are tasked with recommending a CPU for a user who primarily uses their computer for graphic design and video editing. They have a moderate budget and require high performance for their demanding tasks. Outline ONE CPU specifications you would consider most important for this user. Justify your answer. Justify your answer.

                                                                         (2 Marks)

14. Describe THREE types of buses in a computer system.   (3 Marks)

15. Central Processing Unit (CPU) is normally regarded as the 'brain' of the computer. State THREE components of the CPU.   (3 Marks)

SECTION B: (60 Marks)

(Answer any THREE (3) questions in this section)

16. The importance of computers in today's world cannot be overstated. Computers play a vital role in various aspects of our lives and have transformed the way we work, communicate, learn, and access information.

    (a) Using a diagram, describe FOUR main components of a computer system.

    (10 Marks)

    (b) Explain FIVE computer hardware components. (10 Marks)

17. Cloud storage refers to the online storage of data on remote servers, accessible through the internet.

    (a) Explain:

        i. THREE advantages of cloud storage (6 Marks)

        ii. THREE disadvantages of cloud storage (6 Marks)

    (b) Describe the process of instruction execution in a pipelined architecture, including the stages involved. (8 Marks)

18. Computer memory refers to the electronic components and systems used by computers to store and retrieve data. It plays a crucial role in the functioning of a computer by providing storage for instructions and data that the processor needs to perform tasks.

    (a) Describe different levels of the memory hierarchy (10 Marks)

    (b) Explain FIVE levels of RAID (Redundant Array of Independent Disks)

    (10 Marks)

19. The importance of computer number systems lies in their fundamental role in representing and manipulating data within a computer system.

    (a) Describe FOUR number systems as used in computer architecture.

    (8 Marks)

    (b) Explain THREE modes of data transfer. (6 Marks)

    (c) A data scientist regularly works with large datasets and performs complex computations. Explain THREE ideal memory specifications for the computer.

    (6 Marks)

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