



**Strathmore**  
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES (SCES)  
BACHELOR OF COMPUTER NETWORKS AND CYBER SECURITY  
END OF SEMESTER EXAMINATION

CNS1101: COMPUTING FUNDAMENTALS

DATE: 25<sup>th</sup> October 2024

Time: 08:00-10:00 Hours

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**Instructions**

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

**Question 1 (30 Marks)**

- a. Computers are divided into three categories as per the data they process, briefly explain the different categories while giving examples of each type of computer. **(6 Marks)**
- b. Computer cases, houses the internal components of a computer such as the power supply, motherboard, central process unit etc. Based on the form factor the cases can be of different designs. Kindly state the four different designs of a computer case. **(2 Marks)**
- c. List four factors that you would consider when buying a new mother board. **(4 Marks)**
- d. Giving examples, list the three categories of network devices. **(3 Marks)**
- e. You are a network administrator of an organisation and with COVID, hybrid working has been introduced and now people are working from home. You have collaborated with Safaricom to get monthly internet bundles at a reduced rate for your colleagues. They start miss using the bundles and they do not sustain them for the month as per the requirements because they are using the same bundles to do their own personal things. Explain how you would resolve this. **(4 Marks)**
- f. A computer motherboard component operates with a 9V power source and has an internal resistance of  $10\Omega$ . Calculate the current flowing through the component and the power consumed. Additionally, discuss how the performance of this component might be impacted if the resistance increases due to overheating. **(4 Marks)**
- g. A high-performance CPU requires a 10V power supply and draws a current of 2.5A during peak processing. Calculate the power consumption of the CPU. What would happen to the CPU's power consumption if its voltage is boosted by 50% due to overclocking? **(3 Marks)**
- h. Your organization has approached you for advice on purchasing a new printer to enhance productivity and streamline operations. What four key factors would you prioritize during the selection process to ensure the printer meets the organization's specific needs, and how would each factor impact overall efficiency and cost-effectiveness? **(4 Marks)**

**Question 2 (15 Marks)**

- a. In a modern network environment, various types of servers play crucial roles in ensuring seamless communication, data management, and security. Drawing from our class discussions, select any four different types of servers, explain their primary functionalities,

and provide examples of how each server type can enhance network efficiency or user experience. **(8 Marks)**

b. Giving examples differentiate between a type one and a type two hypervisor.

**(4 Marks)**

c. What is the difference between cloud computing and virtualization?

**(3 Marks)**

**Question 3 (15 Marks)**

a. Explain the difference between the following.

i) Physical Address and logical Address.

**(2 Marks)**

ii) System software and Application software.

**(2 Marks)**

b. By use of an example of a common PC problem explain how you would implement the six steps of troubleshooting.

**(7 Marks)**

c. Along with Power on self-test (POST) what else does BIOS help identify when powering on your computer?

**(4 Marks)**

**Question 4 (15 Marks)**

a. State any four key functions of an operating system.

**(4 Marks)**

b. Electrostatic discharge (ESD) occurs when there is a build-up of an electric charge and can cause permanent damage to electrical damage. List four measures you can take to prevent ESD damage.

**(4 Marks)**

c. State and explain the elements of information systems.

**(6 Marks)**

d. Explain what social engineering is all about.

**(1 Mark)**

**Question 5 (15 Marks)**

a. Explain the functionality of any four redundant array of independent disks technology that can be used to store data across multiple storage devices and give an advantage and disadvantage for each technology.

**(8 Marks)**

b. Explain the concept of data and provide examples of various data representations.

**(1 Mark)**

c. Describe three common methods for connecting to the internet, providing brief explanations and examples for each.

**(6 Marks)**