



Strathmore
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
BACHELOR OF SCIENCE IN COMPUTER NETWORKS AND CYBER
SECURITY

END OF SEMESTER EXAM
CNS 1101: COMPUTING FUNDAMENTALS

DATE: 18th October 2023

TIME: 2 Hours

INSTRUCTIONS:

1. THIS EXAM CONSISTS OF FIVE QUESTIONS
2. ANSWER QUESTION 1 (COMPULSORY) AND ANY OTHER TWO QUESTIONS
3. DO NOT WRITE ON THE QUESTION PAPER

QUESTION 1

- a) i. What is the difference between a microprocessor and a microcontroller? (2 marks)
ii. What is the purpose of an input/output (I/O) port in a computer system? (1.5 marks)
- b) i. Differentiate between a Hard Disk Drive (HDD) and a Solid State Drive (SSD) in terms of technology and performance. (2 marks)
ii. Relate memory volatility to their speeds and capacity. (2 marks)
- c) i. Differentiate between system software and application software. (2 marks)
ii. Is open-source software the same as free software? Justify your answer. (1.5 marks)
- d) i. What is a motherboard, and why is it a crucial component of a computer? (2 marks)
ii. What is the role of a power supply unit (PSU) in a computer system? (1 mark)
- e) i. Explain the difference between LAN (Local Area Network) and WAN (Wide Area Network). How can you relate internet to this? (3 marks)
ii. Describe binary representation in the context to computer networks. (2 marks)
iii. Why is security important to a computer network? (1 mark)

[Total = 20 marks]

QUESTION 2

- a) Discuss any three computing emerging technologies that relate to computer networks. (9 marks)
- b) Explain how the following number systems are applied to computer networks:
 - i. Decimal (2 marks)
 - ii. Hexadecimal (2 marks)
 - iii. Binary (2 marks)

[Total = 15 marks]

QUESTION 3

- a) i. Compare and contrast single-tasking and multi-tasking operating systems. Provide examples of each. (5 marks)
 - ii. Explain the role of the kernel in an operating system. What functions does it perform? (3 marks)
- b) i. What is version control, and why is it crucial for collaborative software development? (3 marks)
 - ii. Describe the purpose of debugging tools and techniques in software development. (4 marks)

[Total = 15 marks]

QUESTION 4

- a) Write short notes on the following computing concepts:
 - i. Virtualization (2 marks)
 - ii. Debugging (2 marks)
 - iii. Quantum computing (2 marks)
- b) i. Describe the database system structure. (6 marks)
 - ii. Differentiate between relational DBMS and non-relational DBMS (3 marks)

[Total = 15 marks]

QUESTION 5

- a) Discuss any four computer network devices that are categorized as computers. Justify your answers. (8 marks)
- b) Explain the following in the context to computing
 - i. Primary storage (1.5 marks)
 - ii. Main memory (2 marks)
 - iii. Controller (2 marks)
 - iv. Expansion slots (1.5 marks)

[Total = 15 marks]