



GREAT ZIMBABWE UNIVERSITY

FINAL EXAMINATION

CCSP 111 INTRODUCTION TO COMPUTER SCIENCE & EDUCATIONAL APPLICATION

DATE: APRIL 2025

TBA

TIME: 3 HOURS

TOTAL MARKS: 100

INSTRUCTIONS TO CANDIDATES:

1. This paper carries SIX questions
2. Answer FIVE questions from this paper
3. Marks for each question are indicated in square brackets ([])

QUESTION 1

- a) Convert 63 and 96 into 2's complement, 8 bit, binary numbers. [4]
- b) Convert 153.513 to octal [3]
- c) Explain the following concepts of number representation, giving examples in each case
 - i) Floating point binary [4]
 - ii) Binary negative number [4]
 - iii) Normalisation of float point numbers [5]

QUESTION 2

- a) Give and briefly explain three type of computer Buses. [4]
- b) For each bus you give in (a) brief explain the type of data and how data moves in these buses. [6]
- c) Below is a list of control lines that are part of the control bus or found in the control bus. State the function or use of each control line.
 - i) Memory write
 - ii) Memory read
 - iii) I/O write
 - iv) Transfer ACK
 - v) Bus request[10]

QUESTION 3

- a) The following is a list of unsorted numbers. Sort the numbers using Merge sort and Bubble sort

45	15	40	8	22	60	5
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[16]

- b) Which sort technique is more economic? Give the reason why is it more economic than the other one.

[4]

QUESTION 4

- a) Give an outline of the main registers found in the fetch-execute cycle. [8]
b) With the aid of diagrams explain the major differences between Von Neumann Architecture and Harvard Architecture of a computer system [12]

QUESTION 5

- a) A university consists of a number of departments. Each department offers several courses. A number of modules make up each course. Students enrol in a particular course and take modules towards the completion of that course. Each module is taught by a lecturer from the appropriate department, and each lecturer tutors a group of students
- i) List all the entities found in the University's database [5]
ii) Draw an ER diagram that captures this information showing all the relationships and cardinalities. [9]
- b) Explain the following database terms briefly.
- i) Attribute
ii) Entity
iii) One-to-many relationship
iv) Entity set [6]

QUESTION 6

The principal of a local college requires the installation of either a Star or a Token ring network topology.

- a) As an IT person what advice would you give him on the best topology between the two? [8]
b) Clearly state the advantages and disadvantages of each. [12]

Total Marks = 100

End of Paper