

BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF SCIENCE EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY
BACHELOR OF SCIENCE EDUCATION IN COMPUTER SCIENCE

5 AUG 2023

EDT102: INTRODUCTION TO PROGRAMMING

TIME: 3 HOURS

INSTRUCTIONS

Answer **any four** of the **five** questions. Each question carries **25**marks.

Multiple Choice questions have **NO** part marks

Question 1

- a. Define what you understand by the term Algorithm as used in the course. [3]
- b. List the **five** standard data types used in python. [5]
- c. Give **any five** features of python dictionaries [5]
- d. What is the importance of syntax in programming? Choose the answer that best applies in Python. [2]
 - A Syntax is not as important as the proper use of variables when writing code.
 - B When code contains syntax errors, the program will not execute correctly
 - C A computer cannot recognize code that does not contain Boolean values
 - D A computer cannot recognize code that contains any misspelled words.
- e. The following piece of generic code is an example of which of the following ways that workflow can be controlled in a program? [2]

```
INTEGER a = 1
if ( a > 7) THEN
    PRINT "I'm not feeling lucky.";
ELSE
    PRINT "I'm a winner.";
```

- A Looping
- B Selection
- C Repetition
- D Conditional statement

- f. Assume that you want to sort an array A = [33, 14, 25, 67, 99, 66] in an ascending order using Selection sort. After 2 `swaps`, how will the array look like? [3]

A = [14, 33, 25, 67, 99, 66]

A = [14, 25, 66, 67, 99, 33]

A = [14, 25, 33, 66, 67, 99]

A = [14, 25, 33, 67, 99, 66]

Question 2

- a. Identify the **two types** of functions in python [4]
b. Explain the concept of scope and lifetime of variables in Python programming language with an example [8]
c. Write a python program that allows the user to enter two numbers to be divided. Where possible, calculate the quotient and display the result [8]

Question 3

- a. Explain how to create a dictionary in python? [5]
b. Explain the **five** methods that are used in Python Lists. [5]
c. Write Pythonic code to find the factorial of a number. [10]

Question 4

- a. Write a program that displays all the prime numbers up to a value entered by the user. [12]
b. What is a text file? Give an example code of how to create a text file. [8]

Question 5

- a. Identify five errors in the following code such that the Python function is such that it computes the greatest common divisor of two integers [10]

```
def gcd(num1, num2):  
    # Determine the smaller of num1 and num2  
    min = num1 if num1 < num2 else num2  
    # 1 definitely is a common factor to all ints  
    largest_factor = 1  
    for i in range(1, min + 1):  
        if num1 % i == 0 and num2 % i == 0:  
            largest_factor = i # Found larger factor  
    return largest_factor
```

- b. Write a python program that demonstrates parameter passing [10]

THE END