The Co-operative University of Kenya

SPECIAL / SUPPLEMENTARY EXAMINATION AUGUST -2022

EXAMINATION FOR THE DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY / BACHELOR OF SCIENCE IN STATISTICS & INFORMATION TECHNOLOGY (YR I SEM II)

UNIT CODE: BCIT 2115

UNIT TITLE: PYTHON PROGRAMMING

DATE: 1st AUGUST, 2022 **TIME: 9:00 AM – 11:00 AM**

INSTRUCTIONS:

- Answer question **ONE (compulsory)** and any other **TWO** questions

QUESTION ONE

(a) With illustrations, List FIVE data types used in Python (5 Marks)

(b) With the use of illustrations, highlight the reasons why we might use pseudo code to write an algorithm. (4 Marks)

(c) With examples/illustrations, differentiate between a constructor and a method. (4 Marks)

(d) Consider student class containing data fields: Student ID, first name, last name, course, and phone number. It also has two functions: enter details and display details. Show how the above class can be declared. (6 Marks)

(e) Using a loop of your choice, write a program that displays numbers from 1 to 20 in a vertical format. (4 Marks)

(f) Debugging is an important element in python programming

i. Discuss the term debugging (3 Marks)

ii. Describe how debugging approached in a python programming environment (4 Marks)

QUESTION TWO

You are provided with the following student grades for 5 students

Student ID	101	102	103	104	105
CAT mark	20	49	51	70	10
Exam	33	50	69	0	80

Assumptions

- CAT marks are worth 40% of the overall mark
- Exam marks are worth 60% of the overall mark
- Pass mark is 50% and above

Write a python program to:

(a) Produce a list of all the students who have passed (7 Marks)

(b) Produce a separate list of Student Ids for those students who failed (7 Marks)

(c) Generate the Student Id of the student who should get the module prize (the student with the highest overall mark). (6 Marks)

QUESTION THREE

(a) Give any THREE reasons for using functions in Python Programming? (3 Marks)

(b) Write a Python program to create a function that takes the length (l), width (w) and height (h) of a three-dimensional shape as arguments then returns the volume of the shape by multiplying them together (l * w * h). (5 Marks)

(c) Explain TWO ways of achieving polymorphism in Python Programming. (4 Marks)

(d) Write a Python program that demonstrates polymorphism (8 Marks)

QUESTION FOUR

(a) Using examples explain two iteration structures in Python (6 Marks)

(b) Highlight two methods of handling comments in Python (6 Marks)

(c) Write python code for a form that receives two variables id and names and print that which prints them in a file data.py (8 Marks)

QUESTION FIVE

(a) Explain any THREE types of inheritance used in Python (6 Marks)

(b) What is the difference between Data abstraction and data encapsulation? (4 Marks)

(c) With the aid of examples, distinguish between global variables and local variables (5 Marks)

(d) Use for loops to construct a program that displays a pyramid of Xs on the screen. The pyramid should appear as below (5 Marks)

X

XXX

XXXXX

XXXXXXX

XXXXXXXXX