00384

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical & Computer Engineering

Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	**: EEI3372 Programming in Python**
Academic Year	: 2024/25
Date	: 09th August 2025
Time	: 09.30 - 12.30 hrs

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Five (05)** questions in **Six (06)** pages.
3. **Answer all questions.**
4. Answer for each question should commence from a new page.
5. This is a Closed Book Test (**CBT**).
7. Answers should be in clear handwriting.
8. Do not use red colour pen or pencil.

QUESTION 01 [20 Marks]

Write short answers to the following questions.

a. What does a programming language interpreter do? [02 marks]

b. What is meant by "sequential statements" in Python? [03 marks]

c. What is meant by a branching statement in Python? [03 marks]

d. Consider the following Python lists.

```
students = ["Kamal", "Danush", "Ayesha", "Nadeesha", "Farook"]

products = [("Rice", 210.0), ("Soap", 75.0), ("Sugar", 180.0)]
```

When writing answers, ensure that modifications to the lists from previous questions in (d) are considered and upheld.

i.
```
students.append("Zarina")
```
What will be the updated List after running this code?

ii.
```
for name in students:
    print(name.upper(), end=" ")
```
What will be the output after running this code?

iii.
```
students [1:3] = ["Supun", "Heshan"]
```
What will be the modified list after running this code?

iv.
```
students.pop()
```
What will be the updated list after running this code?

v.
```
print(len(products))
```
What will be the output after running this code?

vi.
```
for p in products:
    if p[1] < 200:
        print(p[0])
```
What will be the output after running this code? [02 x6 = 12 marks]

QUESTION 02 [20 Marks]

a. Identify the Python data type of the following variables.

i. `datatype = "String"`

ii. `boolean = 7.5`

iii. `decimal_number = 0`

iv. `list_ = ( 'math', 'science', 'art' )`

v. `age = None` [05 marks]

b. Below is a Python program created for a given requirement. Read the descriptions given and fill the blanks in the code. *(Write your answers in the answer sheet. Only write the answer. DO NOT write the whole code again.)*

ABC Bank wants to generate a monthly summary report for a savings account customer.

The bank calculates:

- Monthly interest based on account type and balance
  - Regular accounts earn 2% interest if the balance is Rs.50,000 or more
  - Premium accounts earn 4% interest if the balance is Rs.50,000 or more
  - All others earn 1% interest
- A maintenance fee of Rs.50 is charged only if the balance falls below Rs.10,000
- The program should show interest earned, maintenance fee, and final balance.

```
# Get user input
accHolder = (i)..... ("Enter account holder's name: ")
accType = (ii)..... ("Enter acc. type regular/premium): ")
balance = .....(iii)(input("Enter current balance: "))

# Interest calculation
if balance >= (iv)..... and accType == "regular":
    interest = balance * (v)..... / 100
elif balance >= 50000 and accType == "(vi).....":
    interest = balance * 4 / 100
else:
    interest = balance * (vii).....

# Maintenance fee
(viii)..... balance < 10000:
    fee = (ix).....
else:
    (x)..... = 0

# Final balance
finalBalance = balance  +  (xi).....  -  (xii).....

# Display report
print("\n--- Monthly Summary for account holder",
(xiii)....., "---")
print("Interest earned: Rs.", (xiv).....)
print("Maintenance fee: Rs.", (xv).....)
print("Final balance: Rs.", finalBalance)
```

[15 marks]

QUESTION 03 [20 Marks]

Determine the value/output of the following Python expressions/code segments.
Hint: None of the following will result in a compile error.

a) `8 / 2 * (2 + 2)` [02 marks]

b)
```
for i in range (99, 91, -2):
    print (i)
```
[03 marks]

c)
```
i = 0
while i < 6:
  i += 1
  if i % 2 == 0:
    continue
  print(i)
```
[04 marks]

d)
```
class Person:
  def __init__(self, name):
    self.name = name.upper()
    name = "Changed"
p – Person("nimal")
print(p.name)
```
[05 marks]

e)
```
def func(s):
    w = "aeiouAEIOU"
    c = 0
    for char in s:
        if char in w:
            c += 1
    return c

print( func("HEllo WOrld!") )
```
[06 marks]

QUESTION 04 [20 Marks]

a. Explain the difference between call by value and call by reference with respect to Python function arguments. [06 marks]

b. What will be the output of the following code? Justify your answer. [04 marks]

```
def modify_list(lst):
    lst.append(100)
my_list = [1, 2, 3]
modify_list(my_list)
print(my_list)
```

c. Fill in the blanks. *(Write your answers in the answer sheet. Only write the answer. DO NOT write the whole sentence again.)*

i. A function in Python is defined using the _____ keyword.

ii. When a function calls itself, it is known as a _____ function.

iii. Functions that do not explicitly return a value, return the special object _____.

iv. In the function definition def greet(name="User"), "User" is the _____ value.

v. Information can be passed into functions as _____.

[02 x 5 = 10 marks]

QUESTION 05 [20 Marks]

a. Briefly explain the below mentioned terms.

i. Exception

ii. Tuple

iii. Instance Method

iv. Private Members [08 Marks]

b. You are tasked with creating a Python command-line application to manage a collection of movies. The system should support different types of movies, each with some common attributes as well as specific details unique to their type. All movies share common attributes: a unique movie ID, title, director and release year. The system should allow users to add, view, search, update, and delete movies. The system specifically stores only two types of movies:

(1) Feature Films, which additionally have a duration (in minutes) and a rating.

(2) Documentaries, which have additional attributes such as a subject (the main topic or theme) and the name of the narrator.

i. Identify a parent class that can be created when developing this system.

ii. Identify all the attributes that should be included in the parent class identified above.

iii. Identify two child classes that can be created when developing this system.

Below is an incomplete Python code created for the "Movie Manager" class. Answer the questions based on this code.

```
class MovieManager:
    def __init__(self):
        self.movies = []
    .
    .
    .

def view_all(self):
        if not self.movies:
            print("No movies in the collection.")
            return
        for movie in self.movies:
            movie.display_info()
            print("-" * 20)

def find_by_id(self, movie_id):
        for movie in self.movies:
            if movie.movie_id == movie_id:
                return movie
        return None
    .
    .
    .
```

iv. What is the data structure used to store movies in this system?

v. Assuming a class for movies has already been created in the system, what method would the developers use in that class to print the movie details?

[12 Marks]

- END -