Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2024

RA3CO32 Python for Robotics Engineers

Programme: B.Tech. Branch/Specialisation: RA

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. An algorithm represented in the form of programming languages is _____. **1**

(a) Flowchart (b) Pseudo code

(c) Program (d) None of these

ii. Method which uses a list of well-defined instructions to complete a task starting from a given initial state from a given initial state to end state is calls as- **1**

(a) Program (b) Flowchart

(c) Algorithm (d) Both (a) and (b)

iii. Which of these in not a core data type? **1**

(a) Lists (b) Dictionary (c) Tuples (d) Class

iv. In order to store values in terms of key and value we use what core data type? **1**

(a) List (b) Tuple (c) Class (d) Dictionary

v. What is the primary purpose of the if statement in Python? **1**

(a) To execute a block of code based on a condition

(b) To perform mathematical operations

(c) To repeat a block of code

(d) To define a function

vi. What will be the output of below python code? **1**

```
str1 = “poWer”
str1.upper()
print(str1)
```

(a) POWER (b) Power (c) power (d) poWer

P.T.O.

vii. Which of the following is NOT a valid way to create a Python dictionary? **1**

(a) my_dict = {'a': 1, 'b': 2, 'c': 3}
(b) my_dict = dict(a=1, b=2, c=3)
(c) my_dict = dict([('a', 1), ('b', 2), ('c', 3)])
(d) my_dict = dict(a=1, b=2, c=3, 'd'=4)

viii. What is the output of the following program? **1**

```
tuple = (1, 2, 3, 4)
tuple.append( (5, 6, 7) )
print(len(my_tuple))
```

(a) 1 (b) 2 (c) 5 (d) Error

ix. Which keyword is used to import a module in Python? **1**

(a) Use (b) Require (c) Import (d) Include

x. How can you remove a module from memory in Python? **1**

(a) By using the 'unload' function from the 'memory' module
(b) By deleting the module file from the files ystem
(c) By using the 'del' keyword followed by the module name
(d) By restarting the Python interpreter

Q.2 i. Differentiate algorithm and pseudo code. **2**

ii. What is flowchart? Explain the basic design structures in flowchart. **3**

iii. Write the algorithm and draw the flowchart for find minimum in a list. **5**

OR iv. What is meant by selection, iteration and sequence? **5**

Q.3 i. What is python interpreter? **4**

ii. Write a program to exchange value of two variables. **6**

OR iii. Explain the data types in python. **6**

Q.4 i. What is chained conditional statement? **4**

ii. What is python break, continue, pass statements? **6**

OR iii. Write an algorithm to find all roots of a quadratic equation $ax^2+bx+c=0$. **6**

Q.5 i. How to split strings and what function is used to perform that operation? **4**

ii. What are python's dictionaries? Explain python dictionaries in detail discussing its operations and methods. **6**

OR iv. What is the difference between lists, tuples and dictionaries? Give an example for their usage. **6**

Q.6 Attempt any two:

i. What is module and package in python? **5**

ii. What is an exception? Explain with few examples. **5**

iii. Which method is used to read the contents of a file which is already created? **5**

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Marking Scheme

RA3CO32 (T) Python for Robotics Engineers

Q.1	i)	C	**1**
	ii)	C	**1**
	iii)	D	**1**
	iv)	D	**1**
	v)	A	**1**
	vi)	A	**1**
	vii)	D	**1**
	viii)	D	**1**
	ix)	C	**1**
	x)	C	**1**
Q.2	i.	1 + 1(Two difference 1 mark each)	**2**
	ii.	1 mark for flowchart + 2 marks design)	**3**
	iii.	2.5 marks for algorithm + 2.5 marks flow chart	**5**
OR	iv.	2 marks selection + 2 mark iteration +1 sequence	**5**
Q.3	i.	2 marks interpreter + 1 mark intermediator + 1 mark scvi p mode	**4**
	ii.	2 marks variable +4 marks per exact	**6**
OR	iii.	(6 marks data types) 1 mark each	**6**
Q.4	i.	1 mark if + 1 mark if else + 1 mark else if + 1 mark nested if	**4**
	ii.	2 marks break + 2 marks continue + 2 mark pass	**6**
OR	iii.	3 marks for incomplete + 3 marks complete answer	**6**
Q.5	i.	The str.split() method is used to split strings up. >>>book=‘Problem Solving and Python Programming‘ >>>print(book.split()) [_Problem‘, _Solving‘, _and‘, _Python‘, _Programing‘]	**3**
	ii.	all()- returns true if all elements of the tuple are true or if tuple is empty any()- returns true if any element of tuple is true len()- returns the length in the tuple max()- returns the largest item in tuple min()- returns the smallest item in tuple sum()- returns the sum of all elements in tuple	**3**
	iii.	3 marks attempt half +4 marks for correct	**7**
OR	iv	6 points → 1 mark each	**7**
Q.6	i.	In Python, module is the way to structure program. Each Python program file is a module, which imports other modules like objects and attributes.	**5**

	ii.	Whenever a runtime error occurs, it creates an exception. Usually, the program stops and Python prints an error message.
		For example,
		dividing by zero creates an exception:
		>>> print 55/0 ZeroDivisionError: integer division or modulo So does accessing a nonexistent list item:
		>>> a = []
		[Type text]
		>>> print a[5]
			5

	iii.	The read method reads data from the file. With no arguments, it reads the entire contents of the file: >>> text = f.read()	**5**

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