Faculty of Engineering
End Semester Examination May 2025
RA3CO32 Python for Robotics Engineers

Programme	:	B.Tech.	Branch/Specialisation	:	RA
Duration	:	3 hours	Maximum Marks	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))   **Marks CO BL**

Q1. A flowchart is used to: **1   1   1**
- ○ Convert pseudo-code into a programming language directly
- ● Represent the logical flow of an algorithm visually
- ○ Identify syntax errors in a program
- ○ Execute an algorithm directly without coding

Q2. Which of the following is a basic building block of an algorithm?   **1   1   1**
- ○ Compiler
- ● Statement
- ○ IDE
- ○ Debugger

Q3. Which operation can be performed on strings?   **1   1   1**
- ○ Slicing
- ○ Concatenation
- ○ Updating
- ● All of these

Q4. y = (24,45,33)
y[2]=222
What will be this command do?   **1   1   1**
- ○ Replace 45 with 222
- ○ Replace 33 with 222
- ○ Insert 222 before 33
- ● Will generate error

Q5. Which statement is used to exit a loop prematurely in Python?   **1   1   1**
- ● break
- ○ Stop
- ○ return
- ○ back

Q6. What will be the output of the following code snippet?   **1   1   1**
```
x = 10
if x > 5:
  print("x is greater than 5")
```

Rubric	Marks
Question is changed old question: In binary search, what is the time complexity in the worst-case scenario?	1

- ● x is greater than 5
- ○ x is less than 5
- ○ x is equal to 5
- ○ No output

Q7. Which of the following is immutable in Python?   **1   1   1**
- ○ List
- ○ Set
- ● Tuple
- ○ Dictionary

Q8. Which of the following data structures in Python does not allow duplicate keys? 1 1 1
- ⦿ Dictionary
- ○ List
- ○ Tuple
- ○ None of these

Q9. Which method is used to read the entire content of a text file in Python? 1 1 2
- ⦿ read()
- ○ readlines()
- ○ readline()
- ○ write()

Q10. Which keyword is used in Python to handle exceptions? 1 1 1
- ○ error
- ○ catch
- ⦿ try
- ○ read

Section 2 (Answer all question(s))

Marks CO BL

Q11. What is a pseudocode? Describe with examples.   3 2 2

Rubric	Marks
What is a pseudocode? 2M Describe with examples. 1M	3

Q12. (a) Design a flow chart for giving discount of 10% on a product if it costs more than Rs 1000 and is not an electronic item.   7 3 3

Rubric	Marks
1M for each step	7

(OR)

(b) Write an algorithm to find the cost of fencing wire around a rectangular field.

Rubric	Marks
1M for each step	7

Section 3 (Answer all question(s))

Marks CO BL

Q13. How lists different from dictionaries?   3 1 1

Rubric	Marks
1M for each point	3

Q14. (a) Write a detailed note on all the operators used in Python.   7 2 2

Rubric	Marks
Write a detailed note on all the operators used in Python.	7

(OR)

(b) Write a detailed note on all the datatypes used in Python.

Rubric	Marks
detailed note on all the datatypes used in Python.	7

Section 4 (Answer all question(s))

Marks CO BL

Q15. Explain the difference between break, continue, and pass with examples.   3 2 2

Rubric	Marks
1M for each	3

Q16. (a) Write a Python program that implements a recursive function to compute the Greatest Common Divisor (GCD) of two numbers.   **7   3   3**

Rubric	Marks
1M for each step	7

(OR)

(b) Write a Python program that implements a recursive function to compute the factorial of a given number.

Rubric	Marks
1M for each step	7

Section 5 (Answer all question(s))

        Marks CO BL

Q17. Generate a list of squares from 1 to 10 using List comprehension.   **3   3   3**

Rubric	Marks
Generate a list of squares from 1 to 10 using List comprehension.	3

Q18. (a) Write a Python program to find the largest and smallest numbers in a given list.   **7   3   3**

Rubric	Marks
1 M for each step	7

(OR)

(b) Write a Python program to check whether a given key exists in a dictionary or not. Also comment whether dictionaries are mutable or not.

Rubric	Marks
1 M for each step	7

Section 6 (Answer all question(s))

        Marks CO BL

Q19. What is the difference between a text file and a binary file in Python?   **3   1   1**

Rubric	Marks
3 difference between a text file and a binary file in Python	3

Q20. (a) Write a Python program to copy the contents of one text file to another.   **7   2   3**

Rubric	Marks
1 Marks for each step	7

(OR)

(b) Write a Python program to validate voter's age. Raise an exception if the age is below 18.

Rubric	Marks
1 marks for each step	7

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