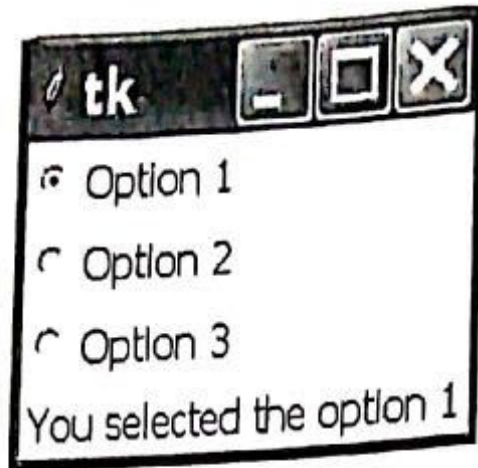(Time: 2½ hours)

Total Marks: 75

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt *any three* of the following: 15
a. Explain the features of Python programming.
b. What is variable? What are the rules and conventions for declaring a variable?
c. Explain if—else statement with an example.
d. Write a Python program to print factorial of a number. Take input from user.
e. Explain continue statement with an example.
f. Write a Python program to calculate area of triangle and circle and print the result. Take input from user.

2. Attempt *any three* of the following: 15
a. Define function. Write syntax to define function. Give example of function definition.
b. What is actual and formal parameter? Explain the difference along with an example.
c. Write a Python program to calculate factorial of given number using recursive function.
d. Discuss the difference between local and global variable.
e. Explain any five basic operations performed on string.
f   Write a Python program to check whether a string is palindrome.

3. Attempt *any three* of the following: 15
a. What are lists? How to define and access the elements of list?
b. Write a program to input any two tuples and interchange the tuple values.
c. Explain directory methods in Python.
d. How to create dictionary in Python? Give example.
e. Explain different modes of opening a file.
f. Write a Python program to accept an integer number and use try/except to catch the exception if a floating point number is entered.

4. Attempt *any three* of the following: 15
a. What is regular expression? What are different types of regular expression?
b. Explain math module with its any five functions.
c. List and explain built in class attributes with example.
d. How to import a module? Explain time module.
e. What is multithreading? How to create a thread?
f. Design a class that store the information of student and display the same.

[TURN OVER]

5. **Attempt _any three_ of the following:**

a. Write a Python code to create the following GUI:

b. Explain the layout manager in detail.
c. What is the use of listbox widget? Give an example to add elements to listbox.
d. Write a source code in Python to create login screen
e. Write a source code in Python to read single and multiple results of query execution
f. Write a source code in Python to show database connectivity and insert the following information in table named 'Item'.

Itemno	Item name	Price	Quantity
101	Geometry Box	50	100
102	Soap	100	50
103	Perfume	150	25
104	Pen	50	200
105	Pencil	20	100

Write queries based upon Item table given
  i. Display item name and price value.
  ii. Display the item information whose name starts with letter 'p'.
  iii. Display item name, whose price is in between 50 to 100.
  iv. Display soap information.
  v. Remove pen information.