



R22 Regulation

Subject code:4E2AT

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech II Semester Supplementary Examinations, January 2026

PROBLEM SOLVING USING PYTHON

(IT)

Maximum Marks: 60

Date: 08.01.2026

Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a	What are the basic building blocks of an algorithm?	1M	1	L1
b	What is the difference between iteration and recursion?	1M	1	L1
c	Evaluate the following expression as per operator precedence rules. $5+7*2/2*2$	1M	2	L5
d	Write a python statement that swaps values of two variables	1M	2	L1
e	Write a for loop that prints numbers from 0 to 57, using range function.	1M	3	L1
f	Explain the difference between local and global scope.	1M	3	L2
g	What is aliasing in lists? Why can it be problematic?	1M	4	L1
h	Can a tuple be used as a return value in python functions? Justify your answer.	1M	4	L4
i	Differentiate syntax errors and exceptions	1M	5	L2
j	How does package differ from a module?	1M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Design a recursive algorithm to compute the n^{th} Fibonacci number. Analyze its time complexity.	5M	1	L5
	b) Compare and contrast different ways of representing algorithms: pseudo code, flowchart, and programming language.	5M		L5
OR				
3	a) Illustrate how an algorithm can be developed from a problem statement using simple problem-solving strategies	5M	1	L3
	b) Given a problem to search an element in a list, suggest an algorithm and evaluate its efficiency.	5M		L5
4	a) Write a python program to define a module to find factorial of a numbers and import the module to another program	5M	2	L3
	b) What is module in python? Explain, how can you use modules in your program explain with an example code.	5M		L2

	OR			
5	a) Differentiate between parameters and arguments in python functions with examples.	5M	2	L2
	b) Discuss the different data types supported by python with appropriate examples.	5M	2	L2
6	a) Discuss various string functions and write a python program to count repeated characters in a string.	5M	3	L2
	b) Write a python program that reads a list of integers and performs addition only on even numbers of the list.	5M		L3
	OR			
7	a) Write a python program to print all prime numbers less than 512.	5M	3	L3
	b) With syntax, explain the finite and infinite looping constructs in python. What is need for break and continue statements?	5M		L2
8	a) How tuples are created in python. Explain different ways to create and access them.	5M	4	L2
	b) Write a python program to split a given dictionary of lists into list of dictionaries using map function.	5M		L3
	OR			
9	a) Describe the use of dictionaries in python and explain how to perform basic operations (add, delete, search).	5M	4	L2
	b) Compare and contrast the selection sort, insertion sort, and merge sort algorithms in terms of logic and time complexity.	5M		L4
10	a) Write a program that counts the number of words in a given text file.	5M	5	L3
	b) Write a program that takes command-line arguments to read a file name and display its content.	5M		L3
	OR			
11	a) How to handle an exception using try except block? Explain with the help of a program.	5M	5	L2
	b) Write a program to import a package and use its module to perform a simple mathematical operation.	5M		L3