R25 Regulation *Subject code:5ES1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, June 2026

C PROGRAMMING & DATA STRUCTURES

(Common to CE & ECE)

Maximum Marks: 60 Date:18.06.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 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 (5X2M=10Marks)		Marks	CO	BTL
1.a	Explain basic data types supported by C language with examples.	2M	1	1
b	Discuss different applications of multi-dimensional arrays.	2M	2	2
c	Discuss different memory allocation functions in C language.	2M	3	2
d	Illustrate initialization of structures with example.	2M	4	2
e	Define abstract data type and give an example.	2M	5	2

Part-B

Answer All the following questions. **(5X10M=50Marks)**		Marks	CO	BTL
2	a) Explain different computing environments with examples. b) Discuss on various computer languages.	5M 5M	1	2
	OR			
3	a) Explain arithmetic, logical operators in C with examples b) Describe the structure of a C program.	5M 5M	1	2
4	a) Demonstrate the difference between while and do-while loop with an example. b) Write a recursive function to calculate factorial of a given number.	5M 5M	2	3 3
	OR			
5	a) Describe how data is passed between functions. Explain call-by-value and call-by-reference mechanisms. b) Develop a program to store n numerical values in an array and identify the minimum and maximum elements.	5M 5M	2	3 3
6	a) Explain how pointers are used for inter-function communication with an example. b) Explain the role of pointers in passing arrays to functions. Illustrate with example.	5M 5M	3	2 3
	OR			

7	a) Explain any five string handling functions available in C with example. b) What is an array of strings? Explain with a suitable example.	5M 5M	3	2 2
8	a) What is typedef in C? Explain its advantages with examples. b) Differentiate between structures and unions with suitable examples.	5M 5M	4	2
	OR			
9	a) Describe standard library functions for file handling in C with examples. b) Write a program to merge two files into a third file.	5M 5M	4	2
10	a) Apply Selection sort technique to sort the following numbers in ascending order. 75, 23, 45, 89, 55, 12, 76, 30 b) Write a C program to search a number in an array using linear search.	5M 5M	5	3 3
	OR			
11	a) Explain singly linked list implementation. Demonstrate creation, and deletion operations with examples. b) Define queue. Explain basic queue operations with examples.	5M 5M	5	2