

**R15**

Code No: 121AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech I Year Examinations, January/February - 2024

**COMPUTER PROGRAMMING**  
(Common to CE, EEE, ME, ECE, CSE, MIE)

Time: 3 Hours

Max. Marks: 75

**Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) Differentiate between a variable and a constant. [2]
- b) Discuss the differences between the pre-increment and post-increment operators in C. Give examples for both of them. [3]
- c) Discuss the role of the #define directive in the preprocessor. [2]
- d) What is a user-defined function in C. Provide an example? [3]
- e) Explain the concept of the address-of operator (&) in relation to pointers. [2]
- f) Explain the purpose of malloc () function in dynamic memory allocation. [3]
- g) Discuss the role of the file pointer in file handling. [2]
- h) Define an enumerated type in C. Provide an example of its usage. [3]
- i) Write the time complexity of selection sort and bubble sort. [2]
- j) Define a linear list and explain its significance in data structures. [3]

**PART - B**

**(50 Marks)**

- 2.a) Compare and contrast the if and switch statements in C.
  - b) Explain Bit-wise operators in C. Evaluate the bitwise AND operation for the given expression:  $a = 5 \& 3$ . [3+7]
- OR**
- 3.a) Write a C program to display the first 10 natural numbers using a **while** loop.
  - b) Explain the difference between for and while loops. [7+3]
- 4.a) Explain the difference between a function declaration and a function definition. Write the significance of function prototypes in C.
  - b) Write a recursive function to calculate the factorial of a number. [4+6]
- OR**
- 5.a) When and where is the **extern** storage class typically used in C?
  - b) Write a program to transpose a matrix using arrays in C. [4+6]

QA QA QA QA QA QA QA G

6.a) How are pointers used for inter-function communication in C?

b) How can pointers be used to traverse an array?

[5+5]

QA QA QA QA OR QA QA G

7.a) Discuss the difference between a character array and a string in C.

b) Write a program that finds the length of a string without using the strlen() function.

[4+6]

8.a) Explain the advantages and limitations of using bit fields.

b) Write a program that uses structures to represent a book with title, author, and publication year.

[4+6]

QA QA QA QA OR QA QA G

9.a) Write a C program that copies the contents of one binary file to another.

b) Enumerate the key differences between text and binary file formats in C.

[6+4]

10.a) Compare queues with stacks, highlighting their differences.

b) Discuss the applications of stacks.

[4+6]

QA QA QA QA OR QA QA G

11.a) Explain how to insert a new node at the end of a singly linked list.

b) Discuss the conditions under which binary search is effective.

[6+4]

---ooOoo---

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G