

Code No: 181AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

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

PROGRAMMING FOR PROBLEM SOLVING

(Common to CSE(AI&ML), CSE(IOT), AI&DS, AI&ML)

Time: 3 Hours

Max. Marks: 60

Note: This question paper contains two parts A and B.i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.

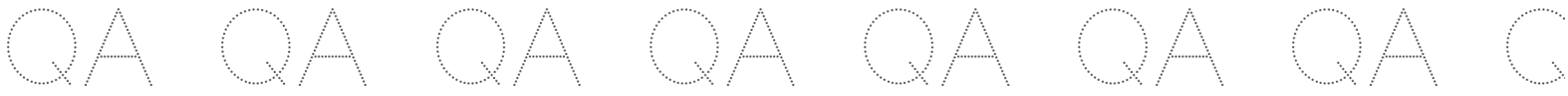
- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A**(10 Marks)**

- | | | |
|------|---|-----|
| 1.a) | List bitwise operators in C. | [1] |
| b) | What is the purpose of type conversion? | [1] |
| c) | What is an array? | [1] |
| d) | What is the significance of the strcpy function? | [1] |
| e) | What is the purpose of the preprocessor in C? | [1] |
| f) | How can you check if a file exists before opening it in C? | [1] |
| g) | What is a function prototype? | [1] |
| h) | Define the term "function signature". | [1] |
| i) | What is the time complexity of bubble sort? | [1] |
| j) | What is the main advantage of binary search over linear search? | [1] |

PART - B**(50 Marks)**

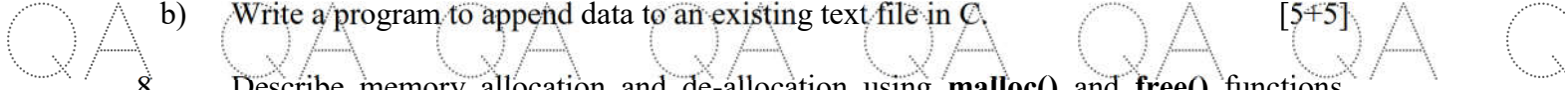
- | | | |
|-----------|---|-------|
| 2.a) | Write an algorithm for finding the roots of a quadratic equation. | |
| b) | Discuss the importance of flowchart and pseudocode in designing algorithm. | [5+5] |
| OR | | |
| 3.a) | Describe the different storage classes available in C. | |
| b) | Explain various types of errors with examples. | [5+5] |
| 4.a) | Explain how to define and use an enumeration data type in C. | |
| b) | Compare character arrays and string literals. How are strings handled as arrays of characters in C? | [4+6] |
| OR | | |
| 5.a) | Describe the process of creating and initializing a one-dimensional array. Give an example. | |
| b) | Discuss the use of pointers in self-referential structures. | [6+4] |



- 6.a) Write a C program to check the end-of-file condition using the **feof** function.
- b) Compare and contrast the **#ifdef** and **#ifndef** directives in C. [5+5]

OR

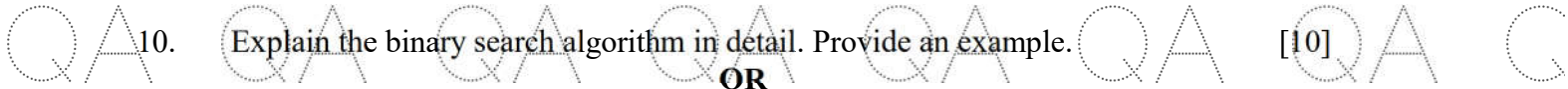
- 7.a) Differentiate between text and binary file modes in C.
- b) Write a program to append data to an existing text file in C. [5+5]



- 8. Describe memory allocation and de-allocation using **malloc()** and **free()** functions. Write suitable example program. [10]

OR

- 9.a) Explain call by reference mechanism with an example.
- b) Write a C program to calculate the factorial of a given number using recursion. [5+5]



- 10. Explain the binary search algorithm in detail. Provide an example. [10]

OR

- 11. Explain the key steps involved in the Insertion sort algorithm with an example. [10]



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