

Roll No: 

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**BTECH**  
**(SEM I) THEORY EXAMINATION 2024-25**  
**PROGRAMMING FOR PROBLEM SOLVING**

**TIME: 3 HRS**

**M.MARKS: 100**

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 2 x 10 = 20**

| Q no. | Question                                                             | CO | Level |
|-------|----------------------------------------------------------------------|----|-------|
| a.    | Differentiate between .obj and .exe files?                           | 1  | K1    |
| b.    | Draw memory hierarchy with context to access time.                   | 1  | K3    |
| c.    | Print "hello world" without using semicolon in C program.            | 2  | K3    |
| d.    | Describe ternary operators.                                          | 2  | K1    |
| e.    | Enumerate any five different functions defined in string.h           | 3  | K1    |
| f.    | List two differences between user defined and pre-defined functions. | 3  | K1    |
| g.    | Examine the limitations of arrays.                                   | 4  | K4    |
| h.    | Define union and write its syntax for declaring it.                  | 4  | K1    |
| i.    | Explain command line arguments in C.                                 | 5  | K2    |
| j.    | List the difference between "f1.c" and <f1.c>                        | 5  | K1    |

**SECTION B**

**2. Attempt any three of the following: 10 x 3 = 30**

|    |                                                                          |   |    |
|----|--------------------------------------------------------------------------|---|----|
| a. | Explain with the help of suitable diagram components of computer system. | 1 | K2 |
| b. | Compare entry and exit controlled loop using example.                    | 2 | K4 |
| c. | Design a C program to swap two numbers using pointers.                   | 3 | K6 |
| d. | Design a C program to print multiplication of two matrices.              | 4 | K6 |
| e. | Define file along with its basic operations using example.               | 5 | K1 |

**SECTION C**

**3. Attempt any one part of the following: 10 x 1 = 10**

|    |                                                                                                                          |   |    |
|----|--------------------------------------------------------------------------------------------------------------------------|---|----|
| a. | Compare algorithm and flowchart along with its characteristics. Write an algorithm to find greatest among three numbers. | 1 | K2 |
| b. | Explain storage classes in detail.                                                                                       | 1 | K2 |

**4. Attempt any one part of the following: 10 x 1 = 10**

|    |                                                                  |   |    |
|----|------------------------------------------------------------------|---|----|
| a. | Illustrate decision control statements with suitable example.    | 2 | K3 |
| b. | Demonstrate operator precedence and associativity using example. | 2 | K3 |

**5. Attempt any one part of the following: 10 x 1 = 10**

|    |                                                                               |   |    |
|----|-------------------------------------------------------------------------------|---|----|
| a. | Identify different categories of function using example.                      | 3 | K1 |
| b. | Define recursion and write a program to print fibonacci series up to n terms. | 3 | K1 |

**6. Attempt any one part of the following: 10 x 1 = 10**

|    |                                                                                                                                              |   |    |
|----|----------------------------------------------------------------------------------------------------------------------------------------------|---|----|
| a. | Explain different searching techniques along with their time complexities.                                                                   | 4 | K2 |
| b. | Describe a structure named "Student" to store student details such as student ID, name, and marks of four subjects. Write a program to input | 4 | K2 |

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|--|----------------------------------------------------------------------------------------------|--|--|
|  | data for five students, find the highest percentage of marks, and display their information. |  |  |
|--|----------------------------------------------------------------------------------------------|--|--|

**7. Attempt any *one* part of the following:** **10 x 1 = 10**

|    |                                                                                                                                              |   |    |
|----|----------------------------------------------------------------------------------------------------------------------------------------------|---|----|
| a. | Illustrate use of dynamic memory allocation? Differentiate between malloc() and calloc() with suitable examples.                             | 5 | K3 |
| b. | Demonstrate the use of pointers in C? How these are declared and initialized. How pointers are used in self-referential structures. Explain. | 5 | K3 |

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