

Bihar Engineering University, Patna
B.Tech 1st Semester Exam-2022

Course: B.Tech.

Code: 100104

Subject: Programming for Problem Solving

Time: 03 Hours

Full Marks: 70

Instructions:-

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory

Q.1 Choose the correct answer of the following: (any seven)

[2 x 7 = 14]

- (a) What does the following declaration mean?
`int *ptr [5];`
 - (i) ptr is an array of pointers to 5 integers
 - (ii) ptr is an array of 5 integers
 - (iii) ptr is a pointer to an array of 5 integers
 - (iv) ptr is a pointer to array
- (b) The function malloc() is declared in which header file.
 - (i) stdio.h (ii) stdlib.h (iii) conio.h (iv) iostream.h
- (c) `#include<stdio.h>`
`int main()`
`{`
`char ch = 'Z'`
`printf ("%d\n", ch);`
`return 0;`
`}`
 - (i) 65 (ii.) 90 (iii) 97 (iv) 122
- (d) How is an array initialized in C language?
 - (i) `int a[3] = {1, 2, 3};`
 - (ii) `int a= {1, 2, 3};`
 - (iii) `int a [] = new int[3];`
 - (iv) `int a(3) = [1, 2, 3];`
- (e) What is the return type of the fopen() function in C?
 - (i) Pointer to a FILE object.
 - (ii) Pointer to an integer.
 - (iii) An integer.
 - (iv) None of the above.
- (f) What will be the output of the following C Code?
`#include<stdio.h>`
`int main()`
`{`
`int x=4, y, z;`
`y= --x;`
`z= x--;`
`printf("%d%d%d", x, y, z);`
`}`
 - (i) 3 2 3
 - (ii) 2 2 3
 - (iii) 3 2 2
 - (iv) 2 3 3
- (g) The keyword used to transfer control from a function back to the calling function is.
 - (i) switch (ii) return (iii) continue (iv) go to

```

(h) #include<stdio.h>
int main( )
{
    float a=5 ,b=2;
    int c,d;
    c=a/b;
    d=c/2;
    printf("%d", d);
    return 0;
}

```

(i) 1 (ii) 0 (iii) 1.5 (iv) 1.25

(i) In C, if you pass an array as an argument to a function, what actually gets passed?

- (i) First element of the array
- (ii) Value of elements of the array
- (iii) Base address of the array
- (iv) Address of the last element of array

(j) How is the 3rd element in an array accessed based on pointer notation

- (i) *a+3 (ii) *(a+3) (iii) *(*a+3) (iv) &(a+3)

Q.2 (a) Explain entry controlled loop and exit controlled loop with flow charts and examples. [7]
 (b) Write a C program to reverse a given multi-digit number. [7]

Q.3 (a) Explain **break** and **continue** keywords with suitable examples in context of managing loops. [7]
 (b) What is storage classes in C. Write features (storage, default value, scope, life) of variables defined under each storage class. [7]

Q.4 (a) Write a C function for Bubble sort. Analyse the time complexity of Bubble sort for each standard cases. [7]
 (b) Differentiate between formal argument and actual argument with an example. [7]

Q.5 (a) What is recursion? Write a recursive C program to generate nth term of the Fibonacci series. [7]
 (b) How string is declared and initialized? Explain any four predefined string manipulation functions with examples. [7]

Q.6 (a) Write a C program to find result matrix after multiplying two given matrices using 2-D arrays. [7]
 (b) Write a program to copy contents of one file to another. While doing so replace all lowercase characters to their equivalent uppercase characters. [7]

Q.7 (a) Write the difference between structure and union. Compare them with the help of an example. [7]
 (b) Write a program to copy the contents of one array into another in reverse order. [7]

Q.8 (a) Differentiate between call-by-value and call-by-reference with suitable examples. [7]
 (b) Discuss conditional operator? Write a C program to find largest of three numbers using conditional operator? [7]

Q.9 (a) Write a C program that converts a string like "124" to an integer 124. [7]
 (b) Write a C program using the nesting of loops to print the following pattern: [7]

```

      1
     2 3
    4 5 6
   7 8 9 10

```