0205N156

Candidate's Seat No :_____

MSc Sem.-2 Examination

408

Bioinformatics

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

Qu 1 (a): Explain briefly different ways of passing parameters in C. Explain what is recursion. Write a recursive function to print a string. [7]

(b) Explain briefly the use of pointers in C. Explain pointer arithmetic and how it can be used to traverse an array. Write a function that takes an integer array as a parameter and returns the sum of its elements. [7]

OR

Qu 1(a): Explain briefly structures in C. Describe an array of structures. Write a program to create a structure student with rno, name and age. Input data for 5 students and print the name of the youngest student. [7]

(b) Explain briefly the use of files in C. Write a program to input a fasta file and print the length of the sequence. [7]

Qu 2(a): Explain briefly the fopen() and fclose() functions. Describe the different input/output functions in C using examples. [7]

(b) Explain briefly a stack and its implementation on arrays with all its operations. [7]

OR

Qu 2(a): Explain briefly what are data structures. Describe the different types of data structures. Describe an array as a data structure with the reverse and copy operation. [7]

(b) Explain briefly a queue and its implementation on linked list with all its operations. [7]

Qu3(a): Explain briefly what are algorithms. Describe briefly its types. Describe brute-force algorithms with an example [7]

(b) Explain briefly what are linked lists and types of linked lists. Describe the insert and traverse operations with the relevant functions [7]

OR

Qu3(a): Explain briefly efficiency of algorithms. Describe the big-Oh notation. [7]

(b) Explain briefly the bubble sort using an example. Write a function to implement it. [7]

Qu 4(a): Explain briefly genetic algorithms. [7]

(b) Explain briefly search algorithms using examples. [7]

OR

Qu 4(a): Write a program to merge two sorted integer arrays as sorted array. [7]

(b) Explain binary search. Write a function that takes an array of integers and size and search value as parameters and prints whether the search value exists in the array [7]

Qu 5: Attempt any 7: [14]

1) Given the code predict the output:

```
int runfunction(int a)
{
if(i ==0)
    return;
else
{
        printf("%d ",i);
        runfunction(i-1);
}
```

(P.T.O)

```
}
void main()
{
   int i=7;
   runfunction(i);
}
```

2) Given the code predict the output:

```
int x;
int n[5]={1,2,3,4,5,6,7,8}
x=*(n+4);
```

Write the printf command to show the data in x and what will be the output.

3) Write the file open command to open "Data1.txt" to write, read and append data

4) Given the code

```
int a=7,b=12;
int *p1=&a,*p2=&b;
printf("%d ",(*p1+*p2));
p1=p2;
printf("%d ",(*p1+*p2));
```

predict the output

Declare an array of 5 elements. Write the for loop to input data in the array

5) Given the code:

```
fp=fopen("file1.txt","r");
```

Write code part to read the file line by line

6) Given the structure

```
struct data
{
        int number;
};
struct data *ptr;
```

Write the malloc function to allocate memory to ptr.

7) Write the pop function to delete for a stack using linked list
8) Write the dequeue function to remove a value from a queue on an array
9) Write the syntax of fread to read from a structure named data
10) Write a recursive function to return the factorial of a input no.
11) The oh-notation for bubble sort is _____
12) Name all the operators of genetic algorithm.