

(2½ Hours)

[Total Marks: 75]

- N. B.: (1) **All** questions are **compulsory**.
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt any three of the following:

15

- a. Discuss any two of the following
 1. Machine Level Language
 2. Assembly Language
 3. Procedural Language
- b. What do you understand from simple program logic? Discuss with suitable example.
- c. What is program development life cycle? Explain its various stages.
- d. Define keywords and identifiers in C language? What are the rules for writing identifiers?
- e. What are desirable characteristics required for writing a program?
- f. What are constants in c? Discuss various types of constants used in c.

2. Attempt any three of the following:

15

- a. Evaluate the following
 1. `int i=10;`
`even=(i%2==0)? 1 :0;`
 2. `a=5,y=10`
`a+=y+1`
- b. What do you understand from precedence/hierarchy of operators in c? Write down the precedence of operators in c.
- c. What do you understand from library functions? Discuss the use of following functions
 1. `getch()` 2. `putch()`
- d. What is `printf()`? Discuss various format strings which can be used with `printf()` giving suitable examples.
- e. What will be the output from following statements where
`a=10,b=5,c=10.5,ch='y',y=20.2,z=80`
 1. `printf("A=%d\n B=%d\nC=%f",a,b,c);`
 2. `printf("x=%c,y=%f,z=%d",ch,y,z);`
- f. Write an interactive C program to accept three numbers from user and find their sum and average.

3. Attempt any three of the following:

15

- a. What are control statements? Explain branching, selection and looping.
- b. Explain the use of while loop with programming example.
- c. What is a switch case statement? Write a program to input number of the day and it should print name of the day.(eg. Input 1 and program should print Monday)
- d. What is a function? Discuss difference between function prototype and function definition.
- e. What is recursion? Write a program to find factorial of a number using recursion.

- f. Write a c program to print following pattern

```
*****
*****
***
**
*
```

4. Attempt any three of the following:

15

- What do you understand from storage classes? Discuss the use of auto and static storage class.
- What following statements will do if s1="Good" and s2="Morning". Also write the output.
`N=strcmp(s1,s2);`
`L=strlen(s2);`
`strcpy(s3,s2);`
`strcat(s1,s2);`
`printf("string1=%s \t string2=%s",s1,s2);`
`printf("N=%d \t Length=%d",N,L);`
- What are preprocessors in c language? List various preprocessors and explain any two of them.
- What is a macro? Write a small program to show the use of a macro.
- What is an array? What are advantages of using arrays? Discuss one-dimensional array.
- Write a c program to swap two numbers using call by value method.

5. Attempt any three of the following:

15

- What is a pointer? How a pointer can be declared and assigned address? Also explain use of Null pointer.
- Consider the following code snippets and write their output
 - `int x=50,y=45;`
`int *ptrx;`
`ptrx=&x;`
`y=*ptrx;`
`*ptrx=30`
`printf("\nx=%d\ty=%d",x,y);`
 - `int x=14;`
`int *ptrx=&x;`
`printf("\nOriginal values:x=%d\tptrx=%d",x,ptrx);`
`ptrx++;`
`printf("\nValues after incrementing: x=%d\tptrx=%d",x,ptrx);`
 Assume that address of x is 110
- What are pointer arrays? How data can be read and written using a pointer array? Explain with suitable example.
- What is a structure? How can we pass a structure to a function? Explain with example.
- What is a union? Discuss its advantages and disadvantages over structure.
- Write a c program to demonstrate the use of union.