

(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:

- a. What is the difference between machine level language and high level language?
- b. Describe the structure of a C Program.
- c. List and explain five desirable program characteristics.
- d. Explain the following with example
 - i) Symbolic Constants
 - ii) Escape Sequences
- e. Draw a flowchart to find the largest of three numbers.
- f. Determine if the following constants are valid in C
 - i) 27.822
 - ii) 0.8E 8
 - iii) "Name:
 - iv) "1.3e-12"
 - v) 0xBCFDAL

2. Attempt any three of the following:

- a. Write a program in C to find the Roots of a Quadratic Equation. 15
- b. Explain the conditional operator and assignment operators in C with example.
- c. Interpret the following C statements
 - i) `scanf("%8d %*d %121f %121f",&a,&b,&c,&d);` [2]
 - ii) `scanf("%c %c %c",&a,&b,&c);` [1]
 - iii) `scanf("%d %d %f %f",&a,&b,&c,&d);` [2]
- d. Write a program in C to solve the following expression $F = P(1+i)^n$
- e. What is a relational expression? List all operators used with it.
- f. Explain gets and printf statements used in C programming language.

3. Attempt any three of the following:

- a. Write the syntax of the if-else statement in C. What are nested 'if' statements?
- b. Write a program in C to find the sum of the series $Y = 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + \dots + n^2$ using a while loop. 15
- c. What is the difference between while and do-while statements in C.
- d. Write a function in C to swap two integer variable using call by value and call by reference.
- e. Explain the switch case statement in C with an example.
- f. Explain the following with respect to function in C
 - i) function prototype
 - ii) formal arguments
 - iii) return expression

4. Attempt any three of the following: 15

- a Explain the meaning of following keywords in C
- i) auto
 - ii) register
 - iii) static
- b Write the use of #define directive. Also give suitable examples.
- c What is a macro? Write a program in C to find the area of a rectangle and square using macros.
- d What is an array? How can a single dimensional array be initialized?
- e Write a program in C to check whether a number is stored in an array of ten integers. If present display its position else display appropriate error message.
- f Explain strlen, strstr, strcmp functions with example.

5. Attempt any three of the following: 15

- a. Explain
- i) Pointer declaration
 - ii) '*' and '&' operators used with pointers
- b. Can structure variable be passed to function as an argument? Justify.
- c. Write a program in C to display the cube of ten elements of an integer array using pointers
- d. Explain the statements of the main() function with its output
- ```
#include<stdio.h>
void main()
{ int line[80];
 int *p1;
 line[2] = line[1];
 line[2] = *(line+1);
 *(line+3)= line[1] +3 ;
 *(line+2)= *(line+1);
 p1 = & line[1];
 p1 = line +1;
}
```
- e. Explain nested structure in C with example.
- f. How array can be used in structure? Explain array of structure variables.