OPTION-C

Paper : MAT–HE–5066

(*Programming in C*)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following :   1×7=7

   (a) What are the basic data types associated with C ?

   (b) What is the difference between '=' and '==' in C ?

   (c) Can a C program be compiled or executed in the absence of a main function ?

   (d) Who developed C language ?

(e) What is the output of the program when the value of *i* is 17 ?

```c
#include <stdio.h>

int main ()

{

    int i, k;

    printf ("Enter the value of i:");

    scanf ("%d", & i);

    k = + + i;

    printf ("%d", k);

    return 0;

}
```

(f) 'Intersection' is a reserved word in C.

*(True **or** False)*

(g) What does %5.2 *f* means in C ?

2. Answer the following :   2×4=8

(a) What is recursion in C ?

(b) What is the difference between the local and global variables in C ?

(c) What are reserved keywords ?

(d) Write the general syntax of scanf ( ) function to read the float variable x.

3. Answer **any three** from the following :

$5 \times 3 = 15$

(a) Explain with examples the syntax of scanf ( ) and printf ( ) functions.

(b) Draw the flowchart and then write a C program to find the roots of a quadratic equation.

(c) What are the three loop control statements available in C ? Write a comparison statement of the three.

(d) What is an array ? What are the different types of array ? Explain selection sorting algorithm to sort n numbers in ascending order.

(e) Explain with examples different types of functions.

4. What is the use of 'if-else' and 'nested if-else' statement ? Write down their formats. Write a C program to find biggest of three numbers using if-else and nested if-else statement. 2+2+3+3=10

Or

Write a C program to read the marks scored by a student in semester examination and print grade point along with the comment using the following : 10

(i) percentage > 90, "O", "OUTSTANDING"

(ii) percentage > = 75 and < = 90, "A" "VERY GOOD"

(iii) percentage > = 60 and < 75, "B", "GOOD"

(iv) percentage > = 50 and < 60, "C", "FAIR"

(v) percentage > = 40 and < 50, "D", "PASS"

(vi) percentage < 40, "F", "FAIL"

5. Write a C program to solve the series

$$s = x - \frac{x^3}{\lfloor 3} + \frac{x^5}{\lfloor 5} - \frac{x^7}{\lfloor 7} \ldots,$$

which is the expansion of sine series with x in radians. 10

Or

Write a C program to multiply two matrices.

6. Write a C program to sort n numbers using bubble sort. 10

Or

What are the uses of recursine function ? Write a C program using recursine function for factorial of a number to find ^nC_r.

2+8=10