44 (1) BCA–HC–1016/1·3 (O)

2022

(Held in 2023)

INTRODUCTION TO C PROGRAMMING

Paper : BCA 1.3/BCA–HC–1016

Full Marks : 80/60

Time : Three hours

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

1. Answer the following questions :   10

   (i) Define 'Nested if' with suitable example.

   (ii) If a is a double precision floating point number variable, then $a = 15/2$ will return _____ ?   (Fill in the blank)

   (iii) How are " = " and " = = " operators different in C ?

   (iv) Define 'bitwise operator' with suitable example.

   (v) Write the full form of ASCII.

(vi) Which 'keyword' is used to prevent any changes in the variable within C program ?

(vii) What are the results of logical or relational expressions in C ?

(viii) "scanf( )" is a predefined function in _____ reader file. (Fill in the blank)

(ix) What is the lowest precedenced operator in C ?

(x) If int a = 10; *P = &a;
     *P++ & P++ stores _____ and _____.
     (Address of a is 3000 in memory)

2. Differentiate the following with suitable example : (any five)   2×5=10

(a) Call by value and call by reference

(b) Array and structure

(c) Dynamic and static memory allocation

(d) Break and continue statement

(e) Actual and formal parameters

(f) Switch case and if-else ladder

3. Write the output of the following program segment (assume no syntax error) :

2×5=10

(a)
```
void main ()
{
    float f = 0.2;
        if (f = = 0.2)
            printf ("Equal");
        else
            printf ("Not Equal");
    getch ();
}
```

(b)
```
void main ()
{
    int i=0;
        do
        {
            i++;
            if (i==2)
                continue;
                printf ("In while loop");
        }
        while (i<2)
        printf ("%d", i);
    getch ()
}
```

```c
(c)   # include < stdio.h >
      void calculate (int x, int y)
      {
         int temp = x + y;
            x+ = temp;
            if (y! = 200)
            printf ("%d", temp);
      }
      void main ()
      {
         int A = 50, B = 20;
         calculate (A, B);
         printf ("%d \n %d \n", A, B);
      }

(d)   Struct size_dt
         {
            int i;
            char c;
         };
         union u_dt {
            int i;
            char c;
         };
         printf ("size of the structure is %u \n", size of (struct size_dt));
         printf ("size of the union is %v", size of (union u_dt));
```

(e) void main ()
```
{
    int i=2, j=3, k;
    k=++i + j++;
    printf ("%d %d %d", i, j, ++k);
    getch ();
}
```

4. Answer the following questions : *(any four)*

$$3 \times 4 = 12$$

   (a) What is structure ? Explain with example.

   (b) How to declare and initialize an array ?

   (c) Write the differences between compiler and interpreter.

   (d) Explain different file access modes.

   (e) How to declare and initialize a pointer ? What is pointer dereferencing ? Which pointer in C can act as a generic pointer ?

5. State True **or** False :   8

   (a) '# define' is known as preprocessor compiler directive.

   (b) The maximum value that an integer constant can have varies from one compiler to another.

(c) The return type of malloc function is void.

(d) Functions can return more than one value at a time.

(e) Are the three declarations char **apple, char *apple [ ], and char apple [ ] [ ] same ?

(f) 'remove (variable_name)' is used to free the allocated memory.

(g) Any expression terminated by a semi-colon is a statement.

(h) 'malloc()' returns a null if it fails to allocate the requested memory.

6. Answer the following questions :

*[For CBCS students **only two** questions to be answered from Q. No. **6**]* $5 \times 2 = 10$

*[For Non-CBCS students **only six** questions to be answered from Q. No. **6**]* $5 \times 6 = 30$

(i) Define functions in C. What are different types of functions ? Define function prototype and function definations. Give *one* example of user defined function (with syntax).

(ii) Write a C program to generate the following series :

0, 1, 1, 2, 3, 5, 8, 13 ..... (30 terms)

(iii) Write a program to test whether a string is palindrome or not. (without using library functions)

(iv) Write a recursive and a non-recursive function to calculate factorial of a number.

(v) Write a program in C to multiply two 3×3 matrix and display the output.

(vi) Write a C program to reverse the digit of a number.

(vii) Write a C proram to concatenate two strings without using library function.

(viii) Write a C program to perform linear search on an array of integers.

(ix) What is command line argument ? Why is it used ? Write a C program to add two numbers using command line argumant.

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