MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

BCA-103

INTRODUCTION TO PROGRAMMING

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer any *ten* questions. $10 \times 1 = 10$

(i) The default return type of any C function is

(A) a character value (B) a decimal value
(C) an integer value (D) void

(ii) How many times will the loop be executed?

```
for(m = 1; m <= 10; m++)
    {
      printf("\n India");
      m + = 3;
    }
```

(A) 10 (B) 4
(C) 3 (D) none

(iii) Which operator is not a binary operator?

(A) + (B) ++

(C) * (D) none of these

(iv) Data type of the controlling statement of a SWITCH statement cannot be of the type

(A) int (B) char (C) short (D) float

(v) The size of a character variable in 'C' is

(A) 1 byte (B) 2 bytes (C) 4 bytes (D) 8 bytes

(vi) How long the following loop runs?

```
for (w = 0; w = 3; w++)
```

(A) forever (B) three times

(C) four times (D) never

(vii) Print the output of the following

```
void main()
{   int a = –3;
    a = – a – a + !a;
    printf("%d\n", a);
}
```

(A) –3 (B) –6 (C) 6 (D) error

(viii) Which is the symbol for NULL?

(A) '\t' (B) '\0' (C) '\n' (D) none

(ix) Find the output

```
int main()
{   int a = 9;        char ch = 'A';
    a = a + ch + 24;
    printf("\t%d \t%d \t%c",ch,a,a);
    return 0;
}
```

(A) 65 98 b (B) 66 65 a

(C) error (D) none

(x) sizeof( ) is a

(A) function (B) operator
(C) identifier (D) none

(xi) ? : is _____

(A) conditional operator (B) keyword
(C) both (A) and (B) (D) none

(xii) Which of the following operators represent logical OR?

(A) Or (B) ! =
(C) | | (D) ~

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. Write a C program which will accept an integer number and print it removing the even digits, e.g., Input – 54327>Output – 537; Input-52863> output 53. 5

3. (a) Define infinite loop with an example. 2+3
(b) Explain entry control and exit control loops with example.

4. Write the executable part of a C program to print 5

1 3 5 7 9
3 5 7 9 1
5 7 9 1 3
7 9 1 3 5
9 1 3 5 7

5. Write a program which will reverse the values in a 1D array of size N. 5

6. What is NAN? When it will generate? Discuss with example. 2+3

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. (a) What is a Function? Give example. 4+4+7
   (b) What is recursion? Write the difference between recursion and iteration.
   (c) Write a program to print the first 100 Fibonacci number using recursive function.

8. (a) What is string in C? Explain working principle of any four string function. (2+4)+4+5
   (b) What do you mean by calloc() and malloc()? Explain their differences.
   (c) Write a program to print the following pattern
   1
   1 0
   1 0 1
   1 0 1 0

9. Write a C program to calculate $\sin(x)$ from 15
   $$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \ldots..$$
   With an accuracy of 10^{-5}.

10. Write a C program to find the prime factors of a number. 15

11. Write a C program to convert Arabic numbers upto 999 to Roman, for example, 26 becomes XXVI, 41 becomes XLI. Take 15
    I = 1, V = 5, X = 10, L = 50, C = 100 and D = 500.