MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : MCA-103

COMPUTER PROGRAMMING WITH C

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) ASCII value of *a* is

   a) 65 b) 32

   c) 97 d) 48.

   ii) What will be the output of the following program ?

```
main ( )
{   float a=12.25, b=13.65;
    if(a=b)
        printf("a and b are equal");
    else
        printf("a and b are not equal";
}
```

   a) a and b are equal b) a and b are not equal

   c) compiler error d) none of these.

iii) What will be the output of the following program ?

```
main( )
{   int x=3,z;
    z=x++ + ++x;
    printf("x=%d z=%d",x,z);
}
```

a) x=8 z=5 b) x=5 z=6

c) x=5 z=8 d) x=5 z=7

iv) What is the range of unsigned short int ?

a) 0 to 65535 b) 0 to 255

c) - 128 to + 127 d) none of these.

v) What is the associativity of the operation [++] ?

a) Right to Left b) Left to Right

c) Both of these d) None of these.

vi) ALU is a part of a/an

a) Input device b) Output device

c) Memory d) CPU.

vii) RAM stands for

a) Random Access Memory

b) Read Access Memory

c) Readwrite Access Memory

d) None of these.

viii) Which one is the special operator ?

a) ?: b) sizeof ( )

c) << d) ++

ix) What is the output of the following code ?

```
int i=100;
while (i<100)
{   i=i+1;
    printf("%d',i);
}
```

a) 100 b) no output

c) 101 d) 99

x) What is the output of the following code ?

```
main( )
{   int nl=30,n2=40;
    n2=n1;
    nl=n2?(n1>2n?nl:n2):n2;
    printf("%d%d",n1,n2);
}
```

a) 30 30 b) 30 60

c) 60 20 d) none of these.

xi) Number of pytes required for long double is

a) 8 b) 10

c) 4 d) 12.

xii) The union holds

a) one object at a time b) multiple objects

c) both (a) and (b) d) none of these.

xiii) The function used to detect the end of file is

a) feof ( ) b) ferror ( )

c) fputs ( ) d) fgetch ( ).

xiv) What will be the output of the following program ?

```
main( )
{   struct employee
    {
        char name [25];
        int age;
        float bs;
    }
    struct employee e;
    e.name="Hacker";
    e.age=25;
    printf("%s%d",e.name,e.age);
}
```

a) Hacker 25 b) compiler error

c) 25 Hacker d) none of these.

xv) What will be the output of the following program ?

```
main ( )
{
    static char str [ ]="Limericks";
    char *s;
    s=&str[6]-6;
    while(*s)
    printf("%",*s++);
}
```

a) Limericks b) compiler error

c) L d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Explain precedence and associativity of operators with suitable examples.
3. Discuss basic data types used in C and the corresponding input/output formats.
4. Compare and contrast between structure and union.
5. Write a C program to find the location of an item in an array.
6. What is recursion ? Explain with an example.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Write a C program to find the values of sin (x), given x in degrees and output them in "x sin (x)" format. The program should be able to take any number of x's as desired by the user without pre-declaring their number. The program can use a pre-defined sin ( ) function.

8. Write a C program to convert a number in the range 1 – 9999 (inclusive) to Roman numeral where 1 = I, 5 = V, 10 = X, 50 = L, 100 = C, 500 = D, 1000 = M and 5000 = N, say.

9. Write a C program to declare and create a dynamic array of integers and then populate it with random numbers. You can decide the length of the array as well as a seal as fictitious random number generator. Once done, print the numbers vertically in a "i * (a + i) ali]" format.

10. Write a C program to find the prime factors of a given integer similarly to Q.No. The program should be able to take any number of integers.

11. Write C programs to solve (i) $x \sin(x)$ and (ii) $x^3 = 249$.