MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : CS-201

BASIC COMPUTATION & PRINCIPLES OF COMPUTER PROGRAMMING

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 the following : $10 \times 1 = 10$

i) The correct syntax to send an array "array" as a parameter to function "func" is

a) func (& array);

b) func (array);

c) func (*array);

d) 1 func (array [size]);

ii) What is the output of the following C code ?

```
# include < stdio.h >
void main ( )
{
double k = 0;
for (k = 0.0; k < 3.0; k ++);
printf ("% f", k);
}
```

a) 2.000000 b) 4.000000

c) 3.000000 d) none of these.

iii) Number of bytes required to store a float variable is

a) 8 bytes b) 4 bytes

c) 2 bytes d) 6 bytes.

iv) The Hexadecimal equivalent of the number (101101010010) 2 is

a) A53 b) A52

c) B52 d) C62.

v) The value of EOF is

a) – 1 b) 0

c) 1 d) 10.

vi) Which of the following are themselves a collection of different data types ?

a) String b) Structure

c) Char d) All of these.

vii) A 64 bit microprocessor has word length equal to

a) 1 byte b) 8 bytes

c) 2 bytes d) 4 bytes.

viii) Which one of the following is a ternary conditional operator ?

a) && b) if

c) <= d) ?

ix) The 2's complement for $(1001)_2$ is

a) 1000 b) 1011

c) 1001 d) 1111.

x) Find out the output :

```
main ( ) {
int i = 1 ;
printf ("\n % d % d % d" i, ++ i, i ++); }
```

a) 331 b) 133

c) 314 d) 111.

GROUP – B

(Short Answer Type Questions)

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

2. Write down the differences between While and Do-While loops in C ? What are compile-time array initialization and run-time array initialization ? 3 + 2

3. Draw the block diagram of showing all the functional units of a digital computer. Explain the function and role of each unit.

4. Add (–14) and 9 using 2's complement method. Convert $(1010110.11010)_2$ to Octal and Hexadecimal and Decimal number system. 2 + 3

5. Write a program to check whether a number is prime or not.

6. What is array of pointers ? Explain with the examples. What is the relation between array and pointers ?

2 + 2 + 1

GROUP – C

(Long Answer Type Questions)

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

7. a) Write an algorithm to find the sum of the n even numbers, where n should be read from user. 5

b) Write a program to print the following pattern. 6

```
        *
      * * *
    * * * * *
  * * * * * * *
```

c) Differentiate between compiler and interpreter. 2

d) What is dynamic memory allocation ? 2

8. a) Write a program to find out the G.C.D. and L.C.M. of two numbers. 5

b) Write a program to print the following pattern

```
1
2 3
4 5 6
7 8 9 10
```

5

c) Write a program to check whether a number is strong or not. 5

9. a) What is ternary operator ? Explain with example.

2 + 1

b) Differentiate between the 'break' and 'continue' statement with example. 4

c) What is the difference between structure and union in C ? Explain with example. 4

d) Write a program to check whether a string is palindrome or not. 4

10. a) What is recursion ? Explain with a suitable example. 2 + 3

b) Explain call by value and call by reference with example. $2\frac{1}{2} + 2\frac{1}{2}$

c) Differentiate between recursion and iteration. 5

11. Write short notes on any *three* of the following : 3 × 5

a) Distinction between RAM and ROM

b) Macro

c) Storage class

d) Structure and union

e) Array of pointers.