AMRITA VIDYALAYAM
SECOND TERMINAL EXAMINATION 2018 -'19

Class : XI   **Marks : 70**
                                                                    Time   : 3 hrs

COMPUTER SCIENCE (NO. 083)

> **GENERAL INSTRUCTIONS:**
> **1. All questions are compulsory.**
> **2. Programming Language: C++.**

1. a) What is a bit? What is a binary code?   **2**
    b) What are the advantages and disadvantages of using computers?   **2**
    c) Define the following.   **2**
        nibble, byte, kilobyte, megabyte, giga byte, terabyte
    d) Name the header files for the following functions.   **2**
        (i) `gets()`   (ii) `strcmp()`   (iii) `setw()`   (iv) `sqrt()`
    e) What is the difference between system software and application software? **2**

2. a) Identify the invalid variable name and rewrite the corrected names.
        _1name, bal.amount, 1point, point_1, book_mark, 1_sname.   **2**
    b) Write short note on language processors.   **3**
    c) What are the different types of digital computers based on their size and performance? Explain. **3**

3. a) Convert the following.   **3**
        (i) $(63.25)_{10}$ to binary   (ii) $(110.01)_2$ to decimal   (iii) $(5A9)_{16}$ to decimal
    b) Find the eight bit two's complement of $(-15)_{10}$.   **2**
    c) Write short note on binary representation of real numbers.   **2**

4. a) Given the following expression.   **2**
        (i) val=3   (ii) val==5;
    Name the operators used in this expression.
    What will be result of (i) and (ii) after execution with initial value of val as 7?
    b) What is the difference between while and do while loop?   **2**
    c) How many times the following loop will be executed?   **2**
```
int x=5;
int y=35;
while (x<=y)
{    x=x+6;   }
```
    d) What will be the value of x, y and z after the following code execution? **2**
```
int x=10;
y=x++;
z=++y;
```

5. a) Distinguish between unary, binary and ternary operators. Give suitable example for each. **3**
    b) Compare and contrast between arrays and structures. Give suitable example for each.   **3**
    c) What is the difference between 'a' and "a"?   **1**
    d) Evaluate the following expression if a = 2, b = -1, c = 1, d = -3.   **2**
        a - c < b || d < c + d && b > b > = ! (a + c - d)
    e) Write the corresponding C++ expressions for the following mathematical expressions. **2**
        (i) $Z = \dfrac{x^5 + y^6 - \sqrt{x\,y}}{2}$ (ii) $F = \dfrac{ab + 2ab^2}{3ab + 8a^2b}$
    f) Construct logical expressions to represent the following conditions.   **2**
        (i) Price is in the range 5000 to 10000 or category is 1.

(ii) X is even and positive.

6. a) What guidelines should be followed for making an efficient program? **3**

b) Differentiate between syntax error and semantic error. **2**

c) Rewrite the following program after removing the syntactical error(s) if any. Underline each correction. **3**

```
#include<iostream.h>
int main
{
    struct movie
    {
        char movie_name[20];
        char movie_type;
        int ticket_cost=100;
    }movie;
    gets(movie_name);
    gets(movie_type);
}
```

7. a) What is the significance of **break** statement in a switch statement? What is the effect of absence of break in a switch statement? **2**

b) What is the output of following code? **3**

```
# include <iostream.h>
void main ()
{
int value= 5;
int sum = 0;
int i;
for (i= 3;i<= 10;i= i+ 2)
    {
    sum+=value;
    value = value + 1;
    cout<<sum<<endl;
    }
}
```

c) Rewrite using **do while** loop. **2**

```
#include<iostream.h>
void main()
{
int x=0;
for(int i=0; i<15; i++)
if(i%3 ==0)
    {  x++;
        cout<<x;
    }
}
```

d) Which of the following array declarations are invalid? State reasons for invalidity. **2**

(i) `float a[+40];`   (ii) `int num[0-10];`

(iii) `amount[20] of float`   (iv) `float values[10]`

e) Write a C++ program to transpose a matrix. **3**

f) Write a menu based program using functions to compute the area and perimeter of the following geometrical figures. **4**

(i) Circle   (ii) Square   (iii) Rectangle