

Roll No. _____

Code : 11-201718CS-A

Please check that this question paper contains 7 questions and 12 printed pages.

CLASS-XI
SUBJECT-COMPUTER SCIENCE

Time allowed : 3 Hrs.

M.Marks : 70

General Instructions :

1. *All questions are compulsory.*
2. *This question paper contains 7 questions and the programming language used is C++*
3. *Please write down the serial number of the question before attempting it.*
4. *15 minutes time has been allotted to read this question paper. During this time, the student will not write on the answer book.*
5. *Do not write anything on the question paper.*

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1. (a) Expand the following terms : (1)
 - (i) GUI
 - (ii) RISC
 - (b) Categorize the following into Utility, System or Application softwares.
 - (i) LINUX
 - (ii) WinRar (1)
 - (c) Differentiate between : (1×2)
 - (i) Freeware & Shareware
 - (ii) Primary & Secondary Memory

(d) Convert the following : (2×2)

(i) $(?)_8 = (13)_{10} = (?)_2$

(ii) $(BF)_{16} = (?)_8 = (?)_2$

(e) How many megabytes make 5 TB ? (1)

(f) Name the two units used for measuring the microprocessor clock speed ? (1)

2. (a) The following program is used to calculate the Simple Interest for the given values

$P = \text{Rs } 1000$ $R = 5\%$ $T = 2 \text{ years}$

While using this program, the programmer observed some errors in the program. Identify and underline the errors and also mention their types. (2)

```
1. #include<iostream.h>
2. void main ()
3. {
4.     float P, R;
5.     int T;
6.     cin >> p >> r >> t;
7.     float SI = (P*R*T*T)/100;
8.     cout<<"Simple Interest : Rs. "<< SI ;
9. }
```

(b) Draw a flowchart to print the factorial of a number input by the user. (4)

(c) Mention the type (finite, infinite) of loops in the following situations (2)

```
(i) int a=5, b=8;
    do
    {
        a + = b++;
    }
    while (b);
```

```
(ii) for ( cs = -5 ; cs < 0 ; cs ++ )
    cout << "POPULAR" << endl ;
```

(d) List any two advantages of Modular Approach. (2)

(e) Mr. Das is a teacher of class XII A. He wants to do the following task : (2)

(i) Accept the marks in two subjects (**sub1, sub2**)

(ii) Calculate & display the average marks (**avg**) in decimals

(iii) Calculate and display grade (**gr**) as an alphabetic information.

Suggest the data types for **sub1** , **sub2** , **avg** and **gr**

3. (a) Write equivalent C++ expression for the following : (4)

(i) $S = ut + \frac{1}{2} ft^2$

(ii) $I_1 = \frac{R_1}{R_1 + R_2} I$

(iii) If Basic_salary is greater than 50000 , DA will be 50% of Basic_salary else 35% of Basic_salary

(iv) To check that My_char is an alphabet

- (b) Jayapriya has started learning C++ & has typed the following program. When she compiled the code she discovered that she needs to include some header files to successfully compile & execute it. Write the names of header files which are essentially required for execution of the following C++ code : (1)

```
void main ()
{
    double item_price = 7638.342252 ;
    cout<<"Price of Item with different precision "<<endl ;
    cout<<setw(3) <<item_price<<endl;
    cout<< setw (4) << item_price <<endl ;
}
```

- (c) Observe the following C++ code carefully and rewrite the same after removing all the syntax error (s) present in the code. Ensure to underline each correction in the code. All desired header files are already included. Correction should not change the logic of the program. (2)

```
# include "iostream.h"
#include (ctype.h)
void main ()
{
    cin>>x;
    if  isalpha (x)
        cout<<"alphabet" ;
    else if (isdigit (x)) ;
        cout<<digit" ;
}
```

- (d) Convert the following expression into if-else construct : (2)

```
char y = x != 1 ? toupper ('p') : tolower ('p' ) ;
```

- (e) Give the output of the following code : (2)

```
int a = 10, b = 10 ;  
cout<< a++ ;  
cout <<" , " ;  
cout << ++ a ;  
cout <<" , " ;  
b = +a +++b/a ;  
cout << b++ ;  
cout <<" , " ;  
cout << ++b ;  
}
```

4. (a) Look at the following C++ code and find the maximum and the minimum values that can be assigned to the variable PICKER. Consider the value of N given by the user is 20. Also find the correct possible output from the options (i) to (iv).

Note : Assume all required header files are already being included in the code. (2)

```
void main ()  
{  
    int N;  
    randomize () ;
```

```

int PICKER ;

cin>>N;

PICKER = 10 + random (N - 10) ;

for ( int i=10 ; i <= PICKER ; i++)
    cout<<i<<" ";

}

```

(i) 10 11 12

(ii) 9 10 11 12

(iii) 11 12 13

(iv) 10 12 14 16 18

(b) Observe the following program carefully & predict the output : (3)

Note : Assume all required header files are already being included in the program.

```

typedef char TEXT [80] ;

void main ()
{
    TEXT str = "We love Peace" ;

    int Index = 0 ;

    while (str [Index] != '\0')
        if (isupper (str[Index] ))
            str [Index++] = '#' ;
        else if (str[Index] != ' ')

```

```

        str [Index++] = '*' ;
    else str [Index++] = '@' ;
    cout <<str ;
}

```

(c) Predict the output of the following code snippet : (2)

```

#include <iostream.h>
int func (int &x, int y=10)
{
    if (x%y == 0)
        return ++x;
    else
        return y-- ;
}
void main ()
{
    int p=20 , q=23;
    q = func (p, q) ;
    cout <<p <<"/t" <<q<<endl ;
    p = func (q) ;
    cout <<p<<"t"<<q<<endl ;
}

```

(d) Consider the following statements : (2)

1. `#include<iostream.h>`
2. `#include<conio.h>`
3. `void main ()`
4. `{`
5. `clrscr () ;`
6. `i=i+1 ;`
7. `cout<<i<<endl ;`
8. `while (i<10)`
9. `int i = 1 ;`
10. `getch () ;`
11. `}`

Rearrange the above statements so that it displays first 10 natural numbers. Do not add extra statements, but you can add the punctuators like (), if required.

(e) Rewrite the following using if –else (3)

```
char ch ;
cout<<"\n Enter the grade from A–E" ;
cin>>ch;
switch (ch)
{
    case 'A' :
    case 'B' : cout<<"Excellent" ;
              break;
```



```

    case 'C' :
    case 'D' : cout<<"Good" ;
                break ;
    case 'E' : cout<<"Average" ;
                break ;
    default : cout<<"Wrong Choice" ;
}

```

5. (a) Give the output of the following program code (assume all necessary header files are included in program) : (3)

```

int a= 3;
void demo (int x , int y , int &z)
{
    a+ = x +y;
    z = a + y;
    y+ = x;
    cout<<x<<y<<z<<endl ;
}
void main ()
{
    int a = 2, b = 5;
    demo (: : a, a,b) ;
    cout<< : : a<<a<<b<<endl ;
    demo (: : a, a,b) ;
}

```

- (b) NDPL – Electricity Board charges according to the following rates
 For the first 100 units – 40 P per unit (p–Paise)
 For the next 200 units – 50 P per unit
 Beyond 300 units – 60 P per unit
 All customer has to pay meter charge at the rate of ₹ 50/- per meter.
 Based on above information, write the C++ program to input number of units consumed and display total amount to find the payment to be made to NDPL. (3)
- (c) What is the difference between Type Casting & Automatic Type Conversion ? Give suitable example to illustrate the difference using C++ code. (2)
6. (a) Write a function **count_word ()** to count and display the number of words in a string. Function should take the string as argument. (assume there is only one space between two words) (4)

For example :

Input String : Year 2017 is an International Year of Sustainable Tourism for Development.

Output : 11

The code should be indented properly.

- (b) Write a function **Alter (int A[], int N)** in C++, which should add 5 in all the odd values and 10 in all the even values of array. For example (3)

Original Array A

A [0]	A [1]	A [2]	A [3]	A [4]	A [5]	A [6]
50	11	19	24	28	10	5

Modified Array A

A [0]	A [1]	A [2]	A [3]	A [4]	A [5]	A [6]
60	16	24	34	38	20	10

- (c) Write a user defined function (3)

SumLast7 (int NUM [] [4] , int N, int M)

To find and display the sum of all values which are ending with 7 (i.e. unit place is 7). For example, if the content of array NUM is :

13	34	27
7	23	15
17	5	47

The output should be 98

7. (a) Predict the output of the following code (assume all required header files are included). (3)

```
struct pixel
{
    int C, R ;
};
void Display (Pixel P)
{
    cout<<" Col " <<P.C<<"ROW " <<P.R<<endl;
}
```

```

void main ()
{
    Pixel X = { 40, 50}, Y, Z;
    Z = X;
    X.C += 10;
    Y = Z;
    Y.C += 10;
    Y.R += 20;
    Z.C -= 15;
    Display (X) ;
    Display (Y) ;
    Display (Z) ;
}

```

- (b) Define a structure to store information about employees of an organisation using of the following data elements. (4)

Data Item	Type
Code	Integer
Name	Char (maximum 20 characters)
Dept.	Char (maximum 30 characters)
Salary	Float

Write a program to input the details of 10 employees and print the details of all employees who work in Finance Department.

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