

ASN Senior Secondary School

PREBOARD EXAMINATION 2019-20

COMPUTER SCIENCE
CLASS XII

TIME- 3 HR.
MM-70

General Instructions:-

All the questions are compulsory.

Do all parts of the same question together.

1 (a) What is the difference between call by value and call by reference method? Explain with the help of suitable code. (2)

(b) Write the names of header files, which are necessary to run the following program. (1)

```
void main()
{ int number;
  cin>>number;
  if(abs(number)== number);
  cout<<"positive"; }
```

(c) Observe the following C++ code very carefully and rewrite it after removing any/all syntactical errors with each correction underlined. (2)

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

```
#Define float Max=70.0;
void main()
{ int Speed  char Stop='N';
  cin>>Speed;
  if Speed>Max
  Stop= "Y";
  cout<<Stop<<end;
```

(d) **Observe the following C++ code carefully and obtain the output, which will appear on the screen after execution of it.** (2)

Important Note:

- All the desired header files are already included, which are required to run the code.

```
#include<iostream.h>
#include<ctype.h>
void Mycode(char Msg[],char CH)
{ for(int cnt=0;Msg[cnt]!='\0';cnt++)
{
  if(Msg[cnt]>='B' && Msg[cnt]<='G')
  Msg[cnt]=tolower(Msg[cnt]);
  else
    if(Msg[cnt]=='N' || Msg[cnt]=='n' || Msg[cnt]==' ')
    Msg[cnt]=CH;
  else
    if(cnt%2==0)
```

```

        Msg[cnt]=toupper(Msg[cnt]);
    else
        Msg[cnt]=Msg[cnt-1];
} }
void main()
{ char MyText[]="Input Raw";
  Mycode(MyText, '@');
  cout<<"NEW TEXT:"<<MyText<<endl;    }

```

(e) Observe the following C++ code carefully and obtain the output, which will appear on the screen after execution of it. (3)

Important Note:

- All the desired header files are already included, which are required to run the code.

```

#include<iostream.h>
void in(int x,int y, int &z)
{ x+=y;
  y--;
  z*=(x-y);
}

void out(int z,int y, int &x)
{ x*=y;
  y++;
  z/=(x+y);
}

void main()
{ int a=20, b=30, c=10;
  out(a,c,b);
  cout<<a<<"#"<<b<<"#"<<c<<"#"<<endl;
  in(b,c,a);
  cout<<a<<"@"<<b<<"@"<<c<<"@"<<endl;
  out(a,b,c);
  cout<<a<<"$"<<b<<"$"<<c<<"$"<<endl;    }

```

(f) Based on the following C++ code, find out the expected correct output(s) from the options (i) to (iv). Also find out the minimum and the maximum value that can be assigned to the variable TRICK used in the code at the time when value of Count is 3: (2)

```

#include<stdlib.h>
#include<iostream.h>

void main()
{
    randomize();
    char status[] [10]= { "EXCEL", "GOOD", "OK"};
    int turn=10, trick;
    for(int count=1; count<4; count++)
    {

```

```

        trick=random(count);
        cout<<turn-trick<< status[trick]<<"#";
        turn--;
    }
}

```

Outputs:

- (i) 10EXCEL#9EXCEL# 6OK#
- (ii) 10EXCEL#8OK# 9GOOD#
- (iii) 10EXCEL#9GOOD#10EXCEL#
- (iv) 10EXCEL#10GOOD# 8OK#

2 (a) Explain the concept of data hiding and data abstraction with the help of an example. (2)

(b) Answer the questions (i) and (ii) after going through the following class: (2)

```

class Book
{
    char Title[20];
    int price;
public:
    Book() //Function 1
    {
    }
    void Details() //Function 2
    {
        cout<<"book detail function"<<endl;
    }
    Book(int p) //Function 3
    {
    }
    Book(Book &B); //Function 4
};

```

- (i) Write the complete definition of function 1.
- (ii) Write statements that would call the member Functions 2 and 4.

(c) Write the definition of a class PIC in C++ with following description : (4)

Private Members

- Pno //Data member for Picture Number (an integer)
- Category //Data member for Picture Category (a string)
- Location //Data member for Exhibition Location (a string)
- FixLocation //A member function to assign//Exhibition Location as per category
//as shown in the following table

Category	Location
Classic	Amina
Modern	Jim Plaq
Antique	Ustad Khan

Public Members

- Enter() //A function to allow user to enter values
//Pno, category and call FixLocation() function
- SeeAll() //A function to display all the data members

(d) Answer the questions (i) to (iv) based on the following code: (4)

```

class CUSTOMER
{
    int Cust_no;
    char Cust_Name[20];

```

```

protected:
void Register();
public:
    CUSTOMER();
    void Status();
};
class SALESMAN
{
    int Salesman_no;
    char Salesman_Name[20];
protected:
    float Salary;
public:
    SALESMAN();
    void Enter();
    void Show();
};
class SHOP : private CUSTOMER , public SALESMAN
{
    char Voucher_No[10];
    char Sales_Date[8];
public:
    SHOP();
    void Sales_Entry();
    void Sales_Detail();
};

```

- (i) Write the names of all the members which are accessible from objects belonging to class SALESMAN.
- (ii) Is the function Enter() accessible by status() of class CUSTOMER.
- (iii) Write the names of all the members which are accessible from member functions of class SHOP.
- (iv) How many bytes will be required by an object belonging to class SALESMAN?

3. (a)

Write definition for a function TOPBOTTOM(int M[][5],int N,int M) in C++, which finds and displays sum of the values in topmost row and sum of the values in bottommost row of a matrix M (Assuming the parameter N represents number of Row and the parameter M represent number of Columns). For example, if the content of array M having N as 4 and M as 5 is as follows :

```

10 20 30 40 50
12 15 32 4 15
38 4 11 24 15
5 10 15 20 25

```

The function should find the sum and display the same as : Sum of Top Row : 150 Sum of Bottom Row : 75

- (b) Write a user-defined function NoTwoThree(int Arr[], int N) in C++, which should display the value of all such elements and their corresponding locations in the array Arr (i.e. the array index), which are not multiples of 2 or 3. N represents the total number of elements in the array Arr, to be checked. 3 Example : If the array Arr contains

```
25 8 12 49 9
```

(2)

Then the function should display the output as : 25 at location 0 49 at location 3

(c) A two dimensional array P[20] [50] is stored in the memory along the row with each of its element occupying 4 bytes, find the address of the element P[10] [30], if the element P[5] [4] is stored at the memory location 15000. Also mention the total number of bytes occupied by an array P (3)

(d) Write a function in C++ to perform Insert operation in a circular Queue containing Player's information (represented with the help of an array of structure PLAYER). (4)

struct PLAYER

```
{ long PID; //Player ID
  char Pname[20]; //Player Name
};
```

(e) Convert the following infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion. (2)

X / Y + U* (V-W)

4. (a) A binary file "Students.dat" contains data of 10 students where each student's data is an object of the following class: (1)

```
class Student
{   int Rno; char Name[20];
public:
void EnterData()
{ cin>>Rno; cin.getline(Name,20);   }
void ShowData() { cout<<Rno<<" - "<<Name<<endl;}
};
```

With reference to this information, write output of the following program segment:

```
ifstream File;
Student S;
File.open("STUDENTS.DAT",ios::binary|ios::in);
File.seekg(0, ios::end);
cout<<File.tellg();
```

(b) Write a function COUNT () in C++ which reads the content of a text file "MYFILE.txt" and count the words **do** and **did** (not case sensitive) present in the text file. (2)

(c) Given a binary file "EMP.DAT", containing records of the following structure type. (3)

```
struct EMP
{
  int EMP_code;
  char EMP_name[20];
  double salary;
};
```

Write a function in C++ that would read contents from the file EMP.DAT and create a file named MANAGER.DAT copying only those records from EMP.DAT to MANAGER.DAT who have salary between 200000 and 500000.

5. (a) Following is the list of SQL commands. Separate them into DDL and DML commands.

CREATE, UPDATE, DELETE, ALTER, SELECT, DROP, INSERT (2)

(b)

Consider the following tables DRESS and MATERIAL. Write SQL commands for the statements (i) to (iv)

DRESS

CODE	Dress Name	Price	Mcode	Launchdate	SIZE
1001	Shirt	1800	M001	10-Feb-01	L
1002	Frock	1100	M002	29-Dec-08	
1003	Skirt	2000	M002	18-Feb-09	M
1004	Pant	3000	M001	1-Jan-10	M
1005	Top	500	M003	21-Sep-11	L
1006	Slacks	450	M003	23-Jul-13	

MATERIAL

Mcode	Type
M001	Terelene
M002	Cotton
M003	Polyester
M004	Silk

- Increase the Price of those dresses by 10% whose size is M. (1)
- To display the MATERIAL CODE and the total PRICE from the table DRESS. (1)

The expected output of the query should be

Mcode	Total Price
M001	4800
M002	3100
M003	950

- Write SQL statement to display DRESSCODE, DRESS NAME, Price and TYPE from the tables DRESS and MATERIAL. (2)

(d) Give the output of the following SQL queries (½ X4=2)

- SELECT TYPE, DRESSNAME from DRESS WHERE PRICE BETWEEN 1700 AND 2000;
- Select DISTINCT(MCODE) From Dress;
- SELECT COUNT(SIZE) FROM DRESS;
- SELECT CODE FROM DRESS WHERE SIZE= 'L';

6. (a) State and verify Distributive law algebraically. (2)

(b) Find the complement of the following Boolean function $AB' + C'D'$. (1)

(c) Write the SOP form of the Boolean function $F(P,Q,R) = \sum(0,2,3,5)$. (1)

(d) Draw the logic diagram for the Boolean expression $(x+y)$ using NOR gate. (1)

(d) Reduce the following Boolean Expression to its simplest form using K-Map : (3)

$$F(P,Q,R,S) = \sum(0,1,2,3,5,6,7,10,14,15)$$

7. (a) To provide telemedicine facility in a hilly state, a computer network is to be setup to connect hospitals in 6 small villages (V1, V2, . . . , V6) to the base hospital (H) in the state capital. This is shown in the following diagram.



No village is more than 20km away from the state capital.

Imagine yourself as a computer consultant for this project and answer the following questions with justification:

- (i) Out of the following what kind of link should be provided to setup this network: (1)
 - (a) Microwave link, (b) Radio Link, (c) Wired link
- (ii) What kind of network will be formed: LAN, MAN, or WAN? (1)
- (iii) Many times doctors at village hospital will have to consult senior doctors at the base hospital. For this purpose, how should they contact them: using email, SMS, telephone, or video conference? (1)
- (b) Out of SMTP and POP3 which protocol is the most recent version of standard protocols to receive emails? (1)
- (c) What are cookies in the context of computer networks? (1)
- (d) Rajeshwari is trying for on-line subscription to a magazine. For this she has filled in a form on the magazine's web site. When she clicks submit button she gets a message that she has left e-mail field empty and she must fill it. For such checking which type of script is generally executed – client-side script or server-side script? (1)
- (e) Write any two important characteristics of cloud computing. (1)
- (f) State any one advantage of 4 G technology over 3 G technology. (1)
- (g) What is the importance of cyber law? (1)
- (h) Write the difference between Twisted pair and Coaxile cable. (1)