

Autumn Break 2017
Exam Oriented Assignment
Class-XII B, Computer Science

S.No.	Name of Chapter/Topic	HOT Questions	MLP Questions
1	CLASSES AND OBJECTS	<p>1. What do you understand by member function? 2. Differentiate between local and global class with help of example. 3. Rewrite the following program after removing the syntactical errors (if any). Underline each correction.</p> <pre>#include [iostream.h] class MEMBER { int Mno;float Fees; PUBLIC: void Register(){cin>>Mno>>Fees;} void Display{cout<<Mno<<" : "<<Fees<<endl;} }; void main() { MEMBER M; Register(); M.Display(); }</pre>	<p>1. What are static class members? 2. Differentiate between private and public members of a class in context of Object Oriented Programming. Also give a suitable example illustrating accessibility/no accessibility of each using a class and an object in C++. 3. Observe the following C++ code and answer the questions (i) and (ii). Note : Assume all necessary files are included.</p> <pre>class EXAM { long Code; char EName[20]; float Marks; public: EXAM() //Member Function 1 { Code=100;strcpy(EName,"Noname");Marks=0; } EXAM(EXAM &E) //Member Function 2 { Code=E.Code+1; strcpy(EName,E.EName); Marks=E.Marks; } }; void main() { _____ //Statement 1 _____ //Statement 2 }</pre> <p>(i) Which Object Oriented Programming feature is illustrated by the Member Function 1 and Member Function 2 together in the class EXAM? (ii) Write Statement 1 and Statement 2 to execute Member Function 1 and Member Function 2 respectively.</p>

2	Constructor and Destructor	<p>1. Write any two similarities between Constructor and Destructor. Write the function headers for constructor and destructor of a class Flight.</p> <p>2. Define a class Bus in C++ with the following specifications:</p> <p>Data Members</p> <ul style="list-style-type: none"> ▪ Busno - to store Bus No ▪ From – to store Place name of origin ▪ To – to store Place name of destination ▪ Type – to store Bus Type such as ‘O’ for ordinary ▪ Distance – to store the Distance in Kilometers ▪ Fare –to store the Bus Fare <p>Member Functions</p> <ul style="list-style-type: none"> ▪ A constructor function to initialize Type as ‘O’ and Freight as 500 ▪ A function CalcFare() to calculate Fare as per the following criteria: <table border="0" style="margin-left: 40px;"> <tr> <td>Type</td> <td>Fare</td> </tr> <tr> <td>‘O’</td> <td>15*Distance</td> </tr> <tr> <td>‘E’</td> <td>20*Distance</td> </tr> <tr> <td>‘L’</td> <td>24*Distance</td> </tr> </table> <ul style="list-style-type: none"> ▪ A function Allocate () to allow user to enter values for Busno, From, To, Type and Distance. Also, this function should call CalcFare () to calculate Fare. ▪ A function Show () to display the content of all the data members on screen. 	Type	Fare	‘O’	15*Distance	‘E’	20*Distance	‘L’	24*Distance	<p>1. Answer the questions(i) and (ii) after going through the following class:</p> <pre>class Race { int CarNo, Track; public: Race(); // Function 1 Race(int CN); // Function 2 Race(Race &R); // Function 3 void Register(); // Function 4 void Drive(); // Function 5 }; void main() { Race R; : }</pre> <p>(i) Out of the following, which of the option is correct for calling Function 2? Option 1-Race T(30); Option 2-Race U(R);</p> <p>(ii) Name the feature of Object Oriented Programming, which is illustrated by Function 1, Function 2 and Function 3 combined together.</p> <hr/> <p>Define a class DanceAcademy in C++ with following description:</p> <p>Private Members</p> <ul style="list-style-type: none"> • Enrollno of type int
Type	Fare										
‘O’	15*Distance										
‘E’	20*Distance										
‘L’	24*Distance										

```

Answer the questions(i) and (ii) after going through the following
class:
class planet
{
    char name[20];char distance[20];
public:
    planet() //Function 1
    {
        strcpy(name, "Venus");
        strcpy(distance,"38 million km");
    }
    void display(char na[],char d[]) //Function 2
    {
        cout<<na<<"has "<<d<<" distance from Earth"<<endl;
    }
    planet(char na[], char d[]) //Function 3
    {
        strcpy(name,na);
        strcpy(distance,d);
    }
    ~planet() //Function 4
    {
        cout<<"Planetarium time over!!!"<<endl;
    }
};

```

- I. What is Function 1 referred as? When will it be executed?
 II. Write suitable C++ statement to invoke Function 2.

- Name of type string
- Style of type string
- Fee of type float
- A member function chkfee() to assign the value of fee variable according to the style entered by the user according to the criteria as given below:

Style	Fee
Classical	10000
Western	8000
Freestyle	11000

Public Members

- A function enrollment() to allow users to enter values for Enrollno,Name, Style and call function chkfee()to assign value of fee variable according to the Style entered by the user.
- A function display() to allow users to view the details of all the data members.

3

Inheritance

```

1. Answer the questions (i) to (iv) based on the following :
class One
{
    int A1;
    protected:
    float A2;
    public:
    One();
    void Get1(); void Show1();
};
class Two : private One
{
    int B1;
    protected:
    float B2;
    public:
    Two();
    void Get2();
    void Show();
};
Class Three : public Two
{

```

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

```

class indoor_sports
{
    int i_id;
    char i_name[20];
    char i_coach[20];
    protected:
    int i_rank,i_fee;
    void get_ifee();
    public:
    indoor_sports();
    void iEntry();
    void ishow();
};
class outdoor_sports
{
    int o_id;
    char o_name[20];

```

```

int C1;
public:
Three();
void Get3();
void Show();
};
void main()
{
Three T; //Statement 1
_____ ; //Statement 2
}

```

(i) Which type of Inheritance out of the following is illustrated in the above example?
– Single Level Inheritance, Multilevel Inheritance, Multiple Inheritance

(ii) Write the names of all the member functions, which are directly accessible by the object T of class Three as declared in main() function.

(iii) Write Statement 2 to call function Show() of class Two from the object T of class Three.

(iv) What will be the order of execution of the constructors, when the object T of class Three is declared inside main () ?

```

char o_coach[20];
protected:
int orank,ofee;
void get_ofee();
public:
outdoor_sports();
void oEntry();
void oshow();
};
class sports:public indoor_sports,protected outdoor_sports
{
char rules[20];
public:
sports();
void registration();
void showdata();
};

```

(i) Name the type of inheritance illustrated in the above C++ code.

(ii) Write the names of all the members, which are accessible from the objects belonging to class outdoor_sports.

(iii) Write the names of all the member functions, which are accessible from the member function of class sports.

(iv) What will be the size of the object belonging to class indoor_sports?

4

File Handling

1

Aditi has used a text editing software to type some text. After saving the article as **WORDS.TXT**, she realised that she has wrongly typed alphabet J in place of alphabet I everywhere in the article.

Write a function definition for **JTOI()** in C++ that would display the corrected version of entire content of the file **WORDS.TXT** with all the alphabets "J" to be displayed as an alphabet "I" on screen.

Note : Assuming that **WORD.TXT** does not contain any J alphabet otherwise.

Example :

If Aditi has stored the following content in the file **WORDS.TXT** :

```
WELL, THJS JS A WORD BY JTSELF. YOU COULD STRETCH  
THJS TO BE A SENTENCE
```

The function **JTOI()** should display the following content :

```
WELL, THIS IS A WORD BY ITSELF. YOU COULD STRETCH  
THIS TO BE A SENTENCE
```

Find the output of the following C++ code considering that the binary file **sp.dat** already exists on the hard disk with 2 records in it.

```
class sports  
{  
    int id;  
    char sname[20];  
    char coach[20];  
public:  
    void entry();  
    void show();  
    void writing();  
    void reading();  
};  
  
void sports::reading()  
{  
    ifstream i;  
    i.open("sp.dat");  
    while(1)  
    {  
        i.read((char*)&s,sizeof(s));  
        if(i.eof())  
            break;  
        else  
            cout<<"\n"<<i.tellg();  
    }  
    i.close();  
}  
void main()  
{  
    s.reading();  
}
```

- (b) Write a definition for function COUNTDEPT() in C++ to read each object of a binary file TEACHERS.DAT, find and display the total number of teachers in the department MATHS. Assume that the file TEACHERS.DAT is created with the help of objects of class TEACHERS, which is defined below : 2

```
class TEACHERS
{
    int TID; char DEPT[20];
public:
    void GET()
    {
        cin>>TID; gets (DEPT);
    }
    void SHOW()
    {
        cout<<TID<<" "<<DEPT<<endl;
    }
    char *RDEPT() {return DEPT; }
};
```

- (c) Find the output of the following C++ code considering that the binary file BOOK.DAT exists on the hard disk with a data of 200 books. 1

```
class BOOK
{
    int BID; char BName[20];
public:
    void Enter(); void Display();
};
void main()
{
    fstream InFile;
    InFile.open("BOOK.DAT", ios::binary|ios::in);
    BOOK B;
    InFile.seekg(5*sizeof(B));
    InFile.read((char*)&B, sizeof(B));
    cout<<"Book Number:"<<InFile.tellg()/sizeof(B) + 1;
    InFile.seekg(0, ios::end);
    cout<<" of "<<InFile.tellg()/sizeof(B)<<endl;
    InFile.close();
}
```

2.

Write a user defined function word_count() in C++ to count how many words are present in a text file named "opinion.txt".

For example, if the file opinion.txt contains following text:

Co-education system is necessary for a balanced society. With co-education system, Girls and Boys may develop a feeling of mutual respect towards each other.

The function should display the following:

Total number of words present in the text file are: 24

I. Consider the definition of the following class:

```
class Sample
{
private:
    int x;
    double y;
public :
    Sample(); //Constructor 1
    Sample(int); //Constructor 2
    Sample(int, int); //Constructor 3
    Sample(int, double); //Constructor 4
};
```

i. Write the definition of the constructor 1 so that the private member variables are initialized to 0.

ii. Write the definition of the constructor 2 so that the private member variable x is initialized according to the value of the parameter, and the private member variable y is initialized to 0.

iii. Write the definition of the constructors 3 and 4 so that the private member variables are initialized according to the values of the parameters.

5. Write a function in C++ to add new objects at the bottom of a binary file "STUDENT.DAT", assuming the binary file is containing the objects of the following class.

```
class STUD
{
    int Rno;
    char Name[20];
public:
    void Enter()
    {
        cin>>Rno;gets(Name);
    }
    void Display(){cout<<Rno<<Name<<endl;}
};
```

Write a function display () in C++ to display all the students who have got a distinction(scored percentage more than or equal to 75) from a binary file "stud.dat", assuming the binary file is containing the objects of the following class:

```
class student
{
    int rno;
    char sname [20];
    int percent;
public:
    int retpercent()
    {
        return percent;
    }
    void getdetails()
    {
        cin>>rno;
        gets(sname);
        cin>>percent;
    }
    void showdetails()
    {
        cout<<rno;
        puts(sname);
        cout<<percent;
    }
};
```

- (a) Observe the following table CANDIDATE carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIAN PRODUCT, which has been used to produce the output as shown in RESULT. Also, find the Degree and Cardinality of the RESULT. **2**

TABLE : CANDIDATE

NO	NAME	STREAM
C1	AJAY	LAW
C2	ADITI	MEDICAL
C3	ROHAN	EDUCATION
C4	RISHAV	ENGINEERING

RESULT

NO	NAME
C3	ROHAN

- (b) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables : **6**

TABLE : BOOK

Code	BNAME	TYPE
F101	The priest	Fiction
L102	German easy	Literature
C101	Tarzan in the lost world	Comic
F102	Untold Story	Fiction
C102	War heroes	Comic

- What is DBMS?
- What is relational database model?
- Relation
- Tuples

- SQL
- DDL
- DML
- Relational Algebra
- Selection
- Projection
- Union
- Cartesian Product
- Domain
- Degree
- Cardinality
- Keys
- Candidate Key:
- Primary Key:
- Alternate Key:
- Super Key
- Structured Query Language (SQL)
- Advantages of using SQL:

- Types of SQL Statements

- Data Definition Language (DDL) statement
- Create table
- Drop table
- Alter table
- Data Manipulation Language (DML) statement
- Select
- Update
- Delete
- Insert
- Transaction Control Statement

TABLE : MEMBER

MNO	MNAME	CODE	ISSUEDATE
M101	RAGHAV SINHA	L102	2016-10-13
M103	SARTHAK JOHN	F102	2017-02-23
M102	ANISHA KHAN	C101	2016-06-12

- (i) To display all details from table MEMBER in descending order of ISSUEDATE.
- (ii) To display the BNO and BNAME of all Fiction Type books from the table BOOK.
- (iii) To display the TYPE and number of books in each TYPE from the table BOOK.
- (iv) To display all MNAME and ISSUEDATE of those members from table MEMBER who have books issued (i.e. ISSUEDATE) in the year 2017.
- (v) **SELECT MAX (ISSUEDATE) FROM MEMBER;**
- (vi) **SELECT DISTINCT TYPE FROM BOOK;**
- (vii) **SELECT A.CODE, BNAME, MNO, MNAME
FROM BOOK A, MEMBER B WHERE A.CODE=B.CODE;**
- (viii) **SELECT BNAME FROM BOOK
WHERE TYPE NOT IN ("FICTION", "COMIC");**

6

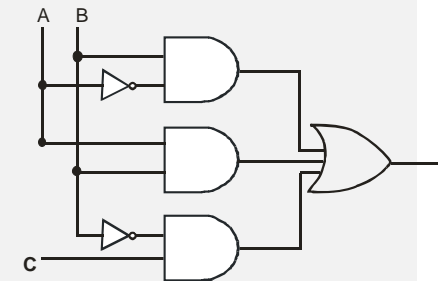
Boolean Algebra

- 6. (a) State Distributive Laws of Boolean Algebra and verify them using truth table. 2
- (b) Draw the Logic Circuit of the following Boolean Expression using only NAND Gates : 2
 $X.Y + Y.Z$
- (c) Derive a Canonical SOP expression for a Boolean function F, represented by the following truth table : 1

U	V	W	F (U, V, W)
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

- (d) Reduce the following Boolean Expression to its simplest form using K-Map : 3
 $F(X, Y, Z, W) = \Sigma(0, 1, 2, 3, 4, 5, 10, 11, 14)$

- 1. Why are NAND and NOR gates called Universal Gates?
- 2 a) State and verify **absorption law** in Boolean algebra.
- b) Verify $X'.Y+X.Y'=(X'+Y).(X+Y)$ algebraically.
- c) Write the equivalent Boolean Expression F for the following **circuit diagram** :



- d) If $F(P,Q,R,S) = \prod (3,4,5,6,7,13,15)$, obtain the simplified form using **K-Map**.

BEST OF LUCK