



INDIAN SCHOOL DARSAIT
FIRST MODEL EXAMINATION - DECEMBER, 2017
COMPUTER SCIENCE (083)



Class: XII
Date: 14-12-2017

Max. Marks: 70
Time: 3hr

General Instructions:

(i) *All questions are compulsory.*

1. a) Bring out the difference between actual and formal argument in C++ with an example. 2
- b) Anil typed the following C++ code and during compilation he found three errors as follows: 1
- (i) Function setw() should have prototype
- (ii) Undefined symbol cout
- On asking, his teacher told him to include necessary header files in the code. Write the names of the header files, which Anil needs to include, for successful compilation & execution of following code:
- ```
void main()
{ int a=5;
char ch = 'g';
cout<<setw(5)<<ch;}
```
- c) Rewrite the following program after removing syntactical errors (if any). Underline each correction. 2
- ```
#include<conio.h>
#include<iostream.h>
#include<string.h>
#include<stdio.h>
class product
{
int product_code,qty,price;
char name[20];
public:
product(){
product_code=0;qty=0;price=0;
name=NULL;
}
void entry()
{
cout<<"\n Enter code,qty,price";
cin>>product_code>>qty>>price;
gets(name);
}
void tot_price() {return qty*price;}
};
void main()
{
p product;
p.entry();
cout<<tot_price();
}
```
- d) Find and write the output of the following C++ program code: 2
- Note: Assume all required header files are already included in the program.

```

#include<iostream.h>
#include<conio.h>
void main( )
{ int I,Array[]={4,6,10,12};
int *pointer=Array;
for(int I=1;I<=3;I++)
{ cout<<*pointer<<"#";
pointer++;}
cout<<endl;
for(I=1;I<=4;I++)
{ (*pointer)*=3;
--pointer;}
for(I=1;I<5;I++)
cout<<Array[I-1]<<"@";
cout<<endl;
getch();
}

```

e) Find and write the output of the following C++ program code:

3

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

```

class Share
{
long int Code;
float Rate;
int DD;
public:
Share(){Code=1000;Rate=100;DD=1;}
void GetCode(long int C,float R)
{
Code=C;
Rate=R;
}
void Update(int Change,int D)
{
Rate+=Change;
DD=D;
}
void Status()
{
cout<<"Date:"<<DD<<endl;
cout<<Code<<"#"<<Rate<<endl;
}
};
void main()
{
Share S,T,U;
S.GetCode(1324,350);
T.GetCode(1435,250);
S.Update(50,28);
U.Update(25,26);
S.Status();
T.Status();
U.Status();
}

```

f) Observe the following program carefully and attempt the given questions:

```
#include<iostream.h>
#include<conio.h>
#include<stdlib.h>
void main(){
randomize();
char courses[][10]={"M.Tech","MCA","MBA","B.Tech"};
int ch;
for(int i=1;i<=3;i++)
{
ch=random(i)+1;
cout<<courses[ch]<<"\t";
}
getch();}
```

- I. Out of all the four courses stored in the variable courses, which course will never be displayed in the output and which course will always be displayed at first in the output?
- II. Mention the minimum and the maximum value assigned to the variable ch?

2. a) Write any four important characteristics of Object Oriented Programming? Give example of any one of the characteristics using C++. 2

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

```
class Retail
{ char Category[20];
char Item[20];
int Qty;
float Price;
Retail() //Function 1
{ strcpy(Category,"Cereal");
strcpy(Item,"Rice");
Qty=100;
Price=25;
}
public:
void Show() //Function 2
{ cout<<Category<<"- "<<Item<<". " <<Qty<<"@" <<Price<<endl;}
};
void main()
{ Retail R; //Statement 1
R.Show(); //Statement 2
}
```

- i) Will Statement 1 initialize all the data members for object R with the values given in the Function 1? (Yes Or No).Justify your answer suggesting the correction(s) to be made in the above code.
- ii) What shall be the possible output when the program gets executed? (Assuming, if required-the suggested correction(s) are made in the program)

c) Define a class Tour in C++ with the description given below: 4

Private Members:

- TCode of type string
- NoofAdults of type integer
- NoofKids of type integer
- Kilometres of type integer
- TotalFare of type float

Public Members:

- A constructor to assign initial values as follows:

TCode with the word "NULL"

NoofAdults as 0

NoofKids as 0

Kilometres as 0

TotalFare as 0

- A function AssignFare() which calculate and assign the value of the data member TotalFare as follows:-

For each Adult:

Fare(Rs)	For Kilometres
500	>=1000
300	<1000 & >=500
200	<500

For each Kid the above Fare will be 50% of the Fare mentioned in the above table

For example:

If Kilometres is 850, NoofAdults = 2 and NoofKids = 3

Then TotalFare should be calculated as

*NumofAdults * 300 + NoofKids * 150*

*i.e. 2 * 300 + 3 * 150 = 1050*

- A function EnterTour() to input the values of the data members TCode, NoofAdults, NoofKids and Kilometres; and invoke the AssignFare() function.

- A function ShowTour() will display the content of all the data members of a clam "Tour".

d) Consider the class definition given below and answer the following questions:

4

```
class film
{ int filmid ;
int filmname;
int leadroles
public:
char leadroleinmale[30];
char leadroleinfemale[30];
film( );
accept( );
display( );
};
class commercialfilm : public film
{ int no_of_songs;
float costpersong;
protected:
int typecode;
public:
char remake;
commercialfilm( );
acceptcomm( );
expenceonsong( );
display( );
};
class artfilm : private film
```

```
{ char theme[50];
public:
artfilm();
acceptart();
display();
};
```

- i) Which type of Inheritance is shown in the above example?
- ii) What is the size of the object of class artfilm?
- iii) Which data members are accessible through the object of class artfilm?
- iv) Which class constructor will be called first at the time of declaration of an object of class artfilm?

3. a) Write a function ADDEND2 (int A [][4], int N, int M) in C++ to find and display the sum of all the values, which are ending with 2 (i.e. units place is 2). 2

For example:

If the content of array is as follows:

22	16	12
19	5	2

Then function should display output as: 36

- b) T[20][50] is a two dimensional array, which is stored in the memory along the row with each of its element occupying 4 bytes, find the address of the element T[15][5], if the element T[10][8] is stored at the memory location 52000. 3

- c) Write the definition of a member function push() for a class Library in C++ to insert a book information in a dynamically allocated stack of books considering the following code is already written as a part of the program: 4

```
struct book{
int bookid;
char bookname[20];
book *next;};
class Library{
book *top;
public:
Library() {top=NULL;}
void push();
void pop();
void disp();
~Library();};
```

- d) Write a function ALTERNATE (int A [][3], int N, int M) in C++ to display all alternate elements from two dimensional array A (starting from A [0][0]). 3

For example:

If the array is containing:

```
23 54 76
37 19 28
62 13 19
```

The output will be: 23 76 19 62 19

- e) Evaluate the following POSTFIX expression. Show the status of Stack after execution of each operation separately: **45, 45, +, 32, 20, 10, /, -, *** 2

4. a) Write a function in C++ to count and display the number of lines not starting with alphabet 'A' present in a text file "STORY.TXT". 2

Example:

If the file "STORY.TXT" contains the following lines,

The rose is red.

A girl is playing there.

There is a playground.

An aeroplane is in the sky.

Numbers are not allowed in the password.

Output: The function should display the output as 3

- b) Write a definition for function BUMPER() in C++ to read each object of a binary file GIFTS.DAT, find and display details of those gifts, which has remarks as "ON DISCOUNT". Assume that the file GIFTS.DAT is created with the help of objects of class GIFTS, which is defined below : 3

```
class GIFTS{
int ID; char Gift[20],Remarks[20]; float Price;
public:
void Takeonstock()
{ cin>>ID;gets(Gift); gets(Remarks); cin>>Price; }
void See()
{ cout<<ID<<"":<<Gift<<"":<<Price<<"":<<Remarks<<endl; }
char *GetRemarks() {return Remarks;}
};
```

- c) 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. 1

```
class sports
{
int id;
char sname[20];
char coach[20];
public:
void entry();
void show();
void writing();
void reading();
}s;
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();}
```

5. a) What do you understand by Degree and Cardinality of a table? Draw a table with degree 6 and cardinality 5, also fill it with valid data. 2
- b) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables 6

DVD

DCODE	DTITLE	DTYPE
F101	Henry Martin	Folk
C102	Dhrupad	Classical
C101	The Planets	Classical
F102	Universal Soldier	Folk
R102	A day in life	Rock

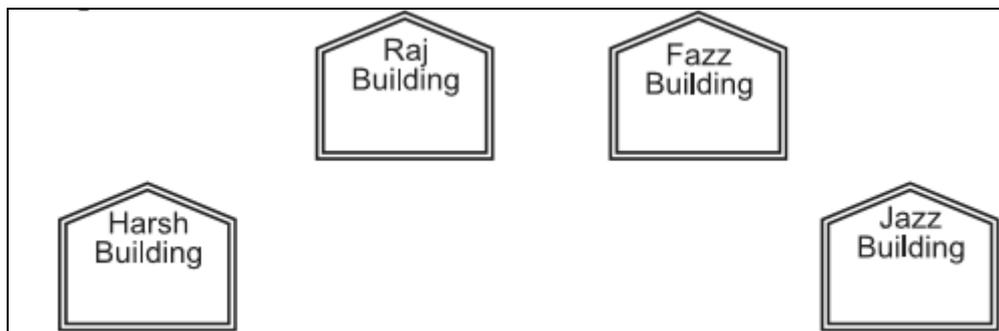
MEMBER

MID	NAME	DCODE	ISSUEDATE
101	AGAM SINGH	R102	2017-11-30
103	ARTH JOSEPH	F102	2016-12-13
102	NISHA HANS	C101	2017-07-24

- i) To display all details from the table MEMBER in descending order of ISSUEDATE.
- ii) To display the DCODE and DTITLE of all Folk Type DVDs from the table DVD
- iii) To display the DTYPE and number of DVDs in each DTYPE from the table DVD
- iv) To display all NAME and ISSUEDATE of those members from the table MEMBER who have DVDs issued (i.e ISSUEDATE) in the year 2017
- v) `SELECT MIN(ISSUEDATE) FROM MEMBER;`
- vi) `SELECT DISTINCT DTYPE FROM DVD;`
- vii) `SELECT D.DCODE,NAME,DTITLE FROM DVD D, MEMBER M WHERE D.DCODE=M.DCODE ;`
- viii) `SELECT DTITLE FROM DVD WHERE DTYPE NOT IN (" Folk " , " Classical ");`

6. a) Verify the following algebraically: $X^2.Y + X.Y^2 = (X^2+Y^2).(X+Y)$ 2
- b) Draw the equivalent Logic Circuit for the following Boolean Expression $F(P,Q)=(P'+Q).(P+Q')$ 2
- c) A Boolean function F defined on three input variable X,Y,Z is 1 if and only if the number of 1(One) input is odd (e.g. F is 1 if X=1,Y=0,Z=0). Draw the truth table for the above function and express it in canonical sum of product form. 1
- d) Reduce the following Boolean Expression to its simplest form using K-Map : 3
 $F(X,Y,Z,W) = \Sigma(2,6,7,8,9,10,11,13,14,15)$
7. a) Compare any two Switching techniques. 2
- b) Which of the following is not a Client Side script: (i) VB Script (ii) Java Script (iii) ASP (iv) PHP 1
- c) If someone has hacked your Website, to whom you lodge the Complain? 1
- d) Compare freeware and Shareware with an example. 2
- e) 'Ravya Industries' has set up its new center at Kaka Nagar for its office and web based activities. The 4

company compound has 4 buildings as shown in the diagram below:



Center to center distances between various buildings is as follows:	
Harsh Building to Raj Building	50 m
Raz Building to Fazz Building	60 m
Fazz Building to Jazz Building	25 m
Jazz Building to Harsh Building	170 m
Harsh Building to Fazz Building	125 m
Raj Building to Jazz Building	90 m
Number of Computers in each of the buildings is follows:	
Harsh Building	15
Raj Building	150
Fazz Building	15
Jazz Bulding	25

Answer the following questions:

- i) Suggest a cable layout of connections between the buildings.
- ii) Suggest the most suitable place (i.e. building) to house the server of this organization with a suitable reason.
- iii) Suggest the placement of the following devices with justification: (a) Repeater (b) Switch
- iv) The organization is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.