

CLASS XII COMPUTER SCIENCE(083)

TimeAllowed : 3 HrsMax Marks : 70

General Instructions- (i) All questions are compulsory

(ii) Programming Language: C++

1. (a) Differentiate between break and continue statements. 2
- (b) Observe the following code and write the name(s) of the header files essentially required to compile it. 1
- ```
void main()
{
 char ch; cin >> ch;
 int x = isdigit(ch);
 if(x)
 cout << "It is a digit";
}
```
- (c) Find out the syntax errors (if any) in the following program. (Assuming all the required header files are included.) 2
- ```
typedef char[30] string;
void main()
{
  string s;
  for(i=0, i<10, i++)
  s[i]=65+i;
  s[i]="\0";
  cout << s;
}
```
- (d) Find the output of the following program. 3
- ```
#include <iostream.h>
void main()
{
 int a[]={5,10,15,20,25,30};
 int *p=a+3;
 for(int i=0; i<3; i++)
 {
 p[i]=a[i];
 a[i]=p[i]*2;
 }
 for(i=0; i<6; i++)
 cout << *(a+i) << " ";
}
```
- (e) Find the output of the following program. 2
- ```
#include <iostream.h>
#include <string.h>
void encode(char S[])
{
  int L=strlen(S);
  for (int C=0; C<L/2; C++)
  if (S[C]=='A' || S[C]=='E')
  S[C]='#';
  else
  {
    char T=S[C];
```

```

S[C]=S[L-C-1];
S[L-C-1]=T;
}
}
void main()
{
char Text[ ]="AISSCE 2014";
encode(Text);
cout<<Text<<endl;
}

```

(f) In the following program, if the value of Guess entered by the user is 65, what will be the expected output(s) from the following options (i), (ii), (iii) and (iv)?

2

```

#include <iostream.h>
#include <stdlib.h>
void main()
{
int Guess;
randomize();
cin>>Guess;
for (int l=4;l>=1;l--)
{
New=Guess+random(l);
cout<<(char)New;
}
}

```

- (i) ACBA
- (ii) BBCA
- (iii) CDBA
- (iv) DABA

2. (a) What do you understand by Data Abstraction? How is it implemented in C++?

2

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

2

```

class Game
{
int Duration;
public:
Game()           //Function 1
{
Duration=70; cout<<"Count Down begins"<<endl;
}
Game (intT)     //Function2
{
Duration=T; cout<<" Count Down begins "<<endl;
}
~Game()         //Function 3
{
cout<<"Declare Winners"<<endl;
}
};

```

i) In Object Oriented Programming, what is Function 3 referred as and when does it get invoked/called?

ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 2 together? Write an example illustrating the calls for these functions.

(c) Define a class book in C++ with the following descriptions :

4

private members :

book_Id	long
title	String
author	String
price	float
quantity	Integer
discount	float
caldisc()	A function to calculate and return discount amount as per the following criteria.

Price	Discount
>=500	10%
300-499	5 %
0-299	No discount

public members:
 enter_book() A function to input the data members book_Id, title, author, price, and quantity and to invoke caldisc() to assign value to discount.
 show_book() To display the book details.

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

4

```
class CUSTOMER
{
  intCustno;
  charCustName[20];
protected:
  void Register();
public:
  CUSTOMER();
  void Status();
};
class SALESMAN
{
  intSalesmanno;
  charSalesmanName[20];
protected:
  float Salary;
public:
  SALESMAN();
  void Enter();
  void Show();
};
classSHOP : public CUSTOMER , private SALESMAN
{
  charVoucherNo[10];
  charSalesDate[8];
public:
  SHOP();
  voidSalesEntry();
  voidSalesDetail();
};
```

(i) Write the names of data members which are accessible from objects belonging to class CUSTOMER.

(ii) Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.

(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 SHOP?

3. (a) Write a function in C++ which accepts an integer array and its No. of elements as arguments and exchanges the values of first half side elements with the second half side elements of the array. 3

Example:

If an array of eight elements has initial content as

1,2,3,4,5,6,7,8

The function should rearrange the array as

5,6,7,8,1,2,3,4 [if the no. of elements is odd middle element will remain unchanged]

- (b) An array A[25][15] is stored in the memory along the column with each of its elements occupying 4 bytes. Find out the base address and the address of an element A[12][7], if the location A[10][10] is stored at the address 8000. 3

- (c) Define the functions push() and pop() of the following class for implementing a dynamic stack. 4

```
struct Node
{
  int p,q;
  Node *Link;
};
class Stack
{
  Node *top;
public:
  STACK() {top=NULL;}
  void push();
  void pop();
  ~Stack();
};
```

- (d) Write a function in C++ to print the sum of all the values which are either divisible by 3 or are divisible by 5 present in a two-dimensional array passed as argument to the function. 2

- (e) Evaluate the following postfix notation of expression: 2

10 20 + 25 15 - * 30 /

4. (a) Observe the program segment given below carefully and fill in the missing statements. 1

```
class Team
{ longTid;
  charTName[20];
  float Points;
public:
  void accept();
  void show();
  voidPointchange();
  longR_Tid(){return Tid;};
  voidReplacePoints( long Id)
  { fstream File;
    File. Open("Team.DAT", ios::binary || ios::in || ios::out);
    Team T;
    int Record =0, found=0;
    while(!found &&File.read((char*)&T, sizeof(Team)))
    { if(Id==T.R_Tid())
      { cout<<"Enter new Points";
        T.Pointchange();
```

```

----- // statement 1 to position file pointer
----- // statement 2 to write the object into the file.
found=1;          }
Record++;
}
if (found ==1)cout<<"Record Updated";
File.close();
}

```

(b) Write a program in C++ to count the total occurrences of words "he" and "she" in a text file "story.txt". [Case of the words to be ignored] 2

(c) Consider the following class declaration: 3

```

class Customer
{
charname[20];
charaddress[30];
char city[15];
charphoneno[15];
public:
void ledger();
void disp();
int checkcity(char A[])
{
return strcmp(city, A);
}
};

```

Write a function COPYCITY() in C++ to search and copy only those records that have city as "Delhi" from a binary file CUSTOMER.DAT to DELHIDATA.DAT.

5. (a) What do you understand by Candidate Keys in a table ? Give a suitable example. 2

(b) Consider the following tables SHOP and SUPPLIER and answer the following questions:

TABLE : SHOP

ICODE	INAME	SCODE	QTY	RATE	BUYDATE
1005	Note Book	13	120	24	03-May-13
1003	Eraser	12	80	5	07-Aug-13
1002	Pencil	12	300	10	04-Mar-13
1006	Bag	11	70	300	27-Dec-12
1001	Pen	13	250	20	18-Jul-13
1004	Sharpener	12	100	10	23-Jun-13
1009	Box	11	50	80	17-Dec-12

TABLE : SUPPLIER

SCODE	SNAME
11	Arya Stationers
12	Stationery House
13	Sapna Stores

(b1) Write SQL commands for the following statements : 4

(i) To display details of all the items in the shop table in ascending order of Buydate.

(ii) To display ICODE and INAME of the items with QTY more than 100.

(iii) To display the ICODE, INAME and TOTAL AMOUNT of each item (TOTAL AMOUNT is the product of QTY and RATE.

(iv) To display SCODE and Number of items supplied for each Supplier

(b2) Give the output of the following SQL queries: 2

(i) SELECT COUNT (DISTINCT SCODE) FROM Shop;

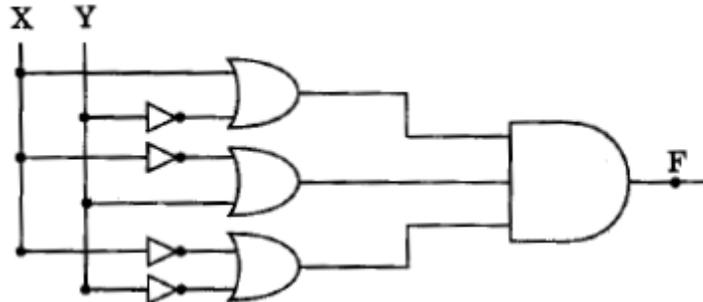
(ii) SELECT SUM(QTY) FROM Shop where SCODE=11;

(iii) SELECT INAME, SNAME FROM Shop S, Supplier P WHERE S.Score = P.Score AND ICODE = 1006 ;

(iv) SELECT MIN (BUYDATE) FROM Store ;

6. (a) State and verify Associative law in Boolean Algebra. 2

(b) Write the equivalent Boolean expression for the following Logic Circuit : 2



(c) Write the POS form of a Boolean Function F, which is represented by the following truth table: 1

A	B	C	F
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

(d) Reduce the following Boolean expression using K - Map: 3

$$F(A, B, C, D) = \sum(0, 1, 2, 3, 4, 5, 10, 11, 15)$$

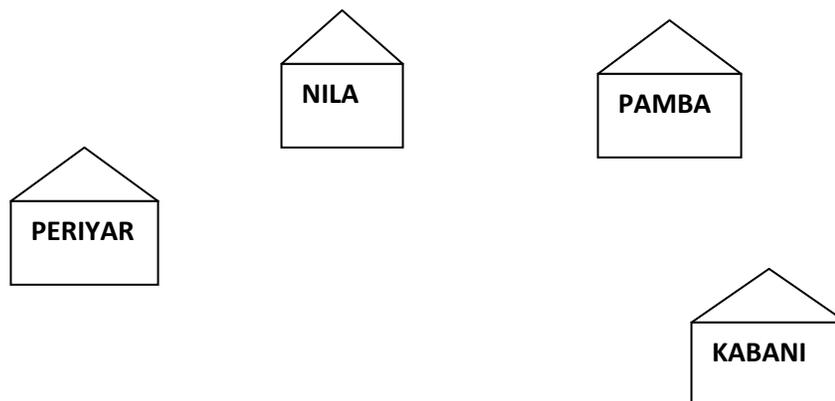
7 (a) What is packet switching? 1

(b) Name two client side scripting languages? 1

(c) What is SMTP? 1

(d) What is Trojan Horse? 1

(e) SOFTSTREAMS INFOTECH has decided to network its office spread in four blocks



No. of Computers in each block

Block	No of Computers
PERIYAR	70
NILA	40
PAMBA	100
KABANI	50

Distance between various blocks		
PERIYAR	NILA	80 M
PAMBA	PERIYAR	120 M
NILA	PAMBA	40 M
PAMBA	KABANI	30 M
KABANI	NILA	110 M
KABANI	PERIYAR	150 M

- (e1) Suggest the most suitable place for the company to place the server. 1
- (e2) Suggest the most suitable cable layout for connecting various blocks. 1
- (e3) Suggest the placement of Switch/Repeater in the network. 1
- (e4) The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed? 1
- (f) How is a freeware different from a free software? 1
- (g) What is cloud computing? 1
