

CLASS-XII
COMPUTER SCIENCE
(Subject Code 083)
PREBOARD-2 2014 -15

Time allowed : 3 hours

Maximum Marks: 70

Instructions: **(i) All questions are compulsory.**

(ii) Programming Language: C++.

Q1. a. Differentiate between implicit typecasting and explicit typecasting in C++.
Explain with an example. [2]

b. Write the related library function name based upon the given information in C++.

(i) Get single character using keyboard. This function is available in stdio.h file.

(ii) To check whether given character is alphabet or not. This function is available in ctype.h file. [1]

c. Rewrite the following C++ program after removing all the syntactical errors (if any), underlining each correction. : [2]

```
include<iostream.h>
#define x 2;
void main( )
{ floata;b;
  cout<<'enter any radius';
  cin>>a;
  a=x*sqrt(ceil(144.2));
  cout<<"val="<<a
}
```

d. Write the output from the following C++ program code: [2]

```
#include<iostream.h>
#include<ctype.h>
voidstrcon(char s[])
{
  for(inti=0,l=0;s[i]!='\0';i++,l++);
  for(int j=0; j<l; j++)
  {
    if (isupper(s[j]))
    s[j]=tolower(s[j]-2); else
    if ( islower(s[j]))
```

```

                else                s[j]=toupper(s[j])+2;
                s[j]='#'; } }
void main()
{
    char *c="Nirmal India";
    strcon(c);
    cout<<"Text= "<<c<<endl;
    c=c+4;
    cout<<"New Text= "<<c<<endl;
    c=c+6-3;
    cout<<"last Text= "<<c; }

```

e. Find the output of the following C++ program:

[3]

```

#include<iostream.h>
#include<conio.h>
#include<ctype.h>
class Lecture
{
    intLno,total; char
    section; public:
    Lecture(int no=2)
    {
        Lno=no;
        section='A';
        total=30;
    }
    voidadmission(int c=20)
    {
        section++;
        total+=c;
    }
    voidShow()
    {
        cout<<Lno<<":"<<section<<":"<<total<<endl;
    }
};
void main()
{
    Lecture C1(8),C2;
    C1.admission(35);
    C1.Show();
    C2.admission();
    C1.admission(60);
}

```

```
    C2.Show(); C1.Show();
}
```

- f. Study the following C++ program and select the possible output(s) from it :
Find the maximum and minimum value of L. [2]

```
#include<stdlib.h>
#include<iostream.h>
#include<string.h>
void main()
{
    randomize();
    char S[]="OOPS CODING";
    long L;
    for(int l=1;S[l]!='C';l++)
    {
        L=random (sizeof(L) +6;
        cout<<P[L]<<"-";
    }
}
```

- i) D-I-N-G-O-
- ii) C-O-O-P-S-
- iii) I-N-D-G-O-
- iv) S-C-P-S-O-

Q2.a. How encapsulation and abstraction are implemented in C++ language?
Explain with an example. [2]

- b. Answer the questions (i) and (ii) after going through the following C++ class: [2]

```
class Player
{
    int PCode ; char Pname[20];float avg;
public:
    Player ( )          //Function 1
    {
        PCode=1;          strcpy (Pname,"DELHI");
        fees=1000;
    }
    void display(float C) //Function 2
    {
        cout<<PCode<<":"<<Pname<<":"<<avg<<endl;
    }
}
```

```

~ Player ( )      //Function 3
{
    cout<<"End of Stream Object"<<endl;
}
Player (intSC,char S[ ],float F) ;      //Function 4
};

```

i) In Object Oriented Programming, what are Function 1 and Function 4 combined together referred as? Write the definition of function 4.

ii) What is the difference between the following statements?

```

Player P(1,"Rozer",23.56);
Player P=Player(1,"Rozer",23.56);

```

c. Define a class DRESS with the following specifications. [4]

Private Members :

Dcode of type Int
Description of type string of 40 characters
Qty of type int
Price, TotalPrice, Disc, Netprice of type Double

Member Functions:

Public members:

* A constructor to assign initial values of Dress Code as 1001,Description as "Evening Gown", Quantity as 0 and Price, Discount and Netprice as 0.

*get_dress () – to read data members(Dcode, Description, Qty and Price) call discount().

* discount () – To calculate Discount according to TotalPrice and NetPrice
TotalPrice = Price*Qty

Total Price	Disc
>=50000	25%
>=25000 and <50000	15%
<25000	10%

Netprice= TotalPrice - Disc

*show_dress () – to display Customer details.

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

```

class Company
{ char Cname[25];
protected : double budget;
public: Company(); char Hoffice[30];
    void Enterdata();void Showdata();
};
class Office
{ char state[25]; double expend;

```

```

protected :char descript[50];
public: Office(); void Add();void Show();
};
class Outlet: public Office, protected Company
{ char city[25];
Protected : long Outletno;
Public Outlet(); void Getinfo(); void Showinfo();
};

```

- (i) Name the kind of Inheritance and the order of constructor and destructor calling.
- (ii) Write the data and the functions inherited by Class Outlet with their accessibility modes.
- (iii) Name the members which can be accessed by the function Showinfo().
- (iv) List all the protected members of the class Outlet.

Q3a) An array T[-3..20][-2..15] is stored in the memory along the row with each element occupying 4 bytes. Find out the base address and address of element T[18][12], if an element T[3][5] is stored at the memory location 2000. Find the total number of elements stored in T and number of bytes allocated to T. [3]

b. Write a function SORTSCORE() in C++ to sort an array of structure IPL in descending order of score using Bubble sort. [3]

Note : Assume the following definition of structure ISL

```

struct ISL
{
int Score;
char Tname[20]; };

```

c. Write member functions to perform **POP and PUSH** operations in a **dynamically allocated stack** containing the objects of the following structure:

[4]

```

Struct Test
{ char ques[30]; int score;
Test *next; };

```

d. Write a function in C++ to print the product of all the non-diagonal negative elements present in a two dimensional array passed as the argument to the function. [2]

e. Evaluate the following postfix expression. Show the status of stack after execution of each operation separately:

22,13, - , 5, +,8,4,/ ,4, *,<

[2]

- Q4. a. Write the command to place the file pointer at the end of the file and 2 last record starting position using seekp() or seekg() command. File object is 'file' and record name is EMPLOYEE. [1]
- b. Write a function in C++ to count and display the no of words starting with a vowel in the the file "VOWEL.TXT". [2]
- c. Write a function in C++ to transfer a particular type of stock from the file "stock.dat" to another file "Site.dat". Assuming that the binary file is containing the records of following structure: [3]

```

struct Products
{
int id;char lname[30];int type;
};

```

Remember that transfer means deletion from the "stock.dat" file and addition in the "site.dat" file.

- 5.(a)What do you understand by Primary Key. Give one database example . [2]
- b)Consider the following tables POREPAID and POSTPAID. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

6

TABLE : PREPAID

Vrno	Cname	Model	Activation_date	Validity (in days)	Amount	Connection
101	Preeti	Nokia	04-jun-09	365	3300	Hutch
102	Suchismita	Nokia	12-feb-09	60	3030	Aircel
103	Swadhin	Samsung	14-may-09	180	900	Indicom
104	Sumanta	Sony	30-jan-09	30	300	Bsnl
105	Sangrila		08-mar-09	45	450	Reliance
106	Pavani	Siemens	02-Apr-09	90	100	Docomo
107	Febina	LG	12-09-09	15	50	Bsnl

TABLE : POSTPAID

vrn	Cmodel	Mname
101	Nokia	Nseries
333	LG	LG225N
222	Samsung	LG225N
105	Sony	K310i

Write the SQL statement for the following :

- (i) Display all distinct records from PREPAID .
- (ii) To display the Model & Amount for Preeti , Suchismita & Pavani .
- (iii) Create a view called ITSECTOR , which contains all the information of PREPAID table whose Connection is Hutch or Model is Nokia .
- (iv) Find all customer name which have third letter **c** as custome name.

v) write the output of the following queries:

a) select Cname , Cmodel , Amount form PREPAID , POSTPAID

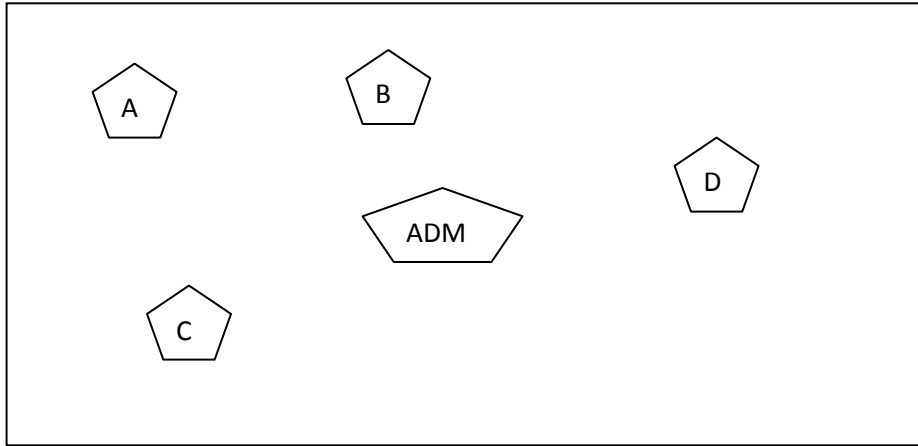
- where PREPAID.Vrno = POSTPAID.Vno ;
- b) select Connection , sum(Amount) from PREPAID group by Connection ;
 - c) select * from PREPAID where Model is NULL ; .
 - d) select Model , count(*) from PREPAID group by Model Having Amount >800 ;

- Q6. a) State and define principle of Duality. Why is it so important in Boolean Algebra? [2]
- b) Draw the logical circuit diagram for the following expression: [2]
 $(X+Y') \cdot (Y'+Z)$
- c) Write Product Of Sum expression of the function F (a,b,c,d) from the given [1]

a	b	c	d	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	1	1	1
1	1	0	0	0
1	1	1	1	1

- d) Obtain the minimal SOP form for the following boolean expression using K-Map. [3]
 $F(w,x,y,z) = (0,2,3,5,7,8,10,11,13,15)$

- Q7. a). Differentiate between SMTP and POP3. [1]
- b). Mention any two advantages of Optical fibers. [1]
- c). Name the protocol used to implement remote login. [1]
- d). Differentiate between 2G and 3G [1]
- e). Name any two applications supported by web 2.0. [1]
- f). Mona is confused between the terms Domain Name and URL. Explain the difference with the help of suitable example. [1]
- g). The premises of a school building is divided into blocks ADM, A,B,C and D as shown in the following figure: [4]



Centre to Centre Distance between different blocks are as follows:

Block A to Block B	100 m
Block A to Block C	120 m
Block A to Block D	220 m
Block B to C	60 m
Block B to D	100 m
Block C to D	100 m
Block ADM to A	120 m
Block ADM to B	30 m
Block ADM to C	40 m
Block ADM to D	100 m

Each of the above blocks has following number of computers :

ADM	10
A	25
B	30
C	25
D	40

- Suggest a cable layout between the different blocks.
- Suggest the most suitable place to house the server of the school , giving suitable reasons.
- Suggest the placement of the following devices with proper justification:
 - Hub/Switch
 - repeater
- If the school needs to link up to its governing office , which is in a neighbouring city (approximately 100 Km away), suggest the best way for the connection, provided price is not a factor.