

KENDRIYA VIDALAYA SANGATHAN
FIRST PRE BOARD 2016-17
Class- XII
Computer Science (083)

Max Marks: 70

Times: 3 Hrs

General Instructions:

• *Programming Language used is C++.*

• *All questions are compulsory.*

Q1 (a) What is the Encapsulation how it is related to classes and objects? (2)

(b) Write the names of header files to which the following functions belong: (1)

(i) strcmpi () (ii) scanf ()

(c) Rewrite the following program after removing the syntactical error(s) if any, underline each correction: (2)

```
#include<iostream.h>
#include<stdio.h>
class TRAIN)
{
long trainno;
char description[25];
name[20];
public:
void entry( ){
cin>>trainno;gets(description);

void display(){ cout << trainno.<<">>Description<<endl;
};
void main()
{TRAIN T;
Entry();
Display();
}
}
```

(d) Give the output of the following program: (2)

```
#include<iostream.h>
void square(int,int);
void main()
{
int i=4,j=10;
square(i,j);
cout<<i<<j;
}
void square(int I ; int j)
{ i=i*j;
J=j*j;
}
```

(e) Study the following program and select the possible output from it: (2)

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

```

void main( )
{
    randomize();
    char Area[][10]={"North"," South"," East", "West"};
    int togo,
    for(int i=0;i<=3;i++)
    togo=random(2)+1;
    cout<<Area[togo]<<"?";
}
}

```

- (i) South:East:south
- (ii) North:South:East
- (iii) South:East:West
- (iv) South:East:East

(f) give the output of the following program:

(3)

```

#include<iostream.h>
#include<ctype.h>
void /secret(char msg,intN);
void main( )
{ clrscr( );
  char sms[]="rEPorTmE";
  secret(sms,2);
  cout<<sms<<endl;}
void secret(char msg[];int N)
{
  for(int c=0; msg[c]!='\0'; c++ )
    if(c%2==0)
      msg[c]=msg[c]+N;
    elseif(isupper(msg[c]))
      msg[c]=tolower(msg[c]);
    else
      msg[c]=msg[c]-N;
}

```

Q2 :(a) What is constructor overloading ? Give an example to illustrate it.

(2)

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

(2)

```

class Seminar
{
int Time;
public:
Seminar() //Function 1
{
Time=30;cout<<"Seminar starts now"<<endl;
}
}

```

```

void Lecture()                                //Function 2
{
cout<<"Lectures in the seminar on"<<endl;
}
Seminar(int Duration)                        //Function 3
{
Time=Duration;cout<<"Seminar starts now"<<endl;
}
~Seminar()                                   //Function 4
{
cout<<"Thanks"<<endl;
}
};

```

- i) In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/called?
ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together? Write an example illustrating the calls for these functions.

(c) Define a class **ADMISSION** in C++ with the following description: private members: (4)

Adno. int type(ranges10-2000)

name arrayofcharacters(string)

fees float type

class integer

Public Members:

readdata () A function to enter the admission detail.

display() A function to display .

drawno.() function to choose 2 students randomly and display details. Use random function to generate admission no. to match with adno.

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

```

class Book
{
char Title[20];
char Author[20];
int noofpages;
public:
void read();
void show(); };
class TextBook: private Book
{ int noofchap, noofassignments;
protected:
int standard;
public:

void readtextbook();
void showtextbook();
}
class Physicsbook:public Textbook
{
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```

```

char Topic[20];
public :
void readphysicsbook();
void showphysicsbook();
};

```

- (i) Names the members, which are accessible from the member functions of class Physicsbook.
- (ii) Write the names of members, which are accessible by an object of class Textbook.
- (iii) Write the names of all members, which are accessible by an object of class Physicsbook.
- (iv) How many bytes will be required by an object belonging to class Physicsbook.

Q3 a) Write a function to display the multiplication of row element of two dimensional array A [4][6] containing integer. (3)

b) An array T [20][15] is stored in the memory along the column with each of the elements occupying 8 bytes , find out the base address and address of elements T[2][3],if an element T[4][5] is stored at the memory location 1000. (3)

c) Write function in C++ to perform Insert operation in a dynamically allocated Queue containing names of employees . (4)

(d) Write a function in SWARARR () in C++ to swap(interchange) the first row elements with the lastrow elements for a two dimensional array passed as the argument of the function. (2)

(e) Evaluate the following postfix notation of expression.5, 20,15,-,*,25,2,*,+, (2)

Q4:(a) Observe the program segment given below carefully, and answer the question that follows(1)
class Candidate

```

{
long CId ; //Candidate's Id
char CName[20]; // Candidate's Name
float Marks; //Candidate's Marks
public :
void Enter() ;
void Display() ;
void MarksChange ( ); // Function to change marks
long R_CId() { return CId ; }
};
void MarksUpdate ( long ID)
{ fstream File ;
File.open (" CANDIDATE.DAT", ios :: binary | ios :: in | ios :: out ) ;
Candidate C ;
int Record = 0 , Found = 0;

```

```

while ( ! Found && File . read ( ( char *) & C , sizeof ( C ) ) )
if ( Id == C.R_CId ( ) )
{ cout << " Enter new marks" ;
C. MarkChange ( );
_____ // Statement 1
_____ // Statement 2
Found = 1 ;
}
Record ++ ;
}i

```

```
f ( found == 1 ) cout << " Record Updated " ;
File. close ( );
}
```

Write the Statement 1 to position the File pointer at the beginning of the Record for which the Candidate's Id matches with the argument passed, and Statement 2 to write the updated Record at that position.

(b) Write a function in C++ to count the no. of "He" or "She" words present in the text file "story.txt". If the file "story.txt" content is as follows:

He is playing in the ground .She is playing with her dolls .the output of the function should be . (2)

c) Assuming that a text file named "TEXT.TXT" already contain some text into it , write a function named vowelwords() , that reads the file "TEXT.TXT" and create a new file named "TEXT1.TXT" , which shall contain only those words from "TEXT.TXT" which don't starts from "A,E,I,O,U". (3)

(d) What is difference between fstream() and ofstream() : (2)

Q 5:(a) what do you mean by drop and Delete commands? Give an example of each (2)

b) Consider the following table Consignor and and consignee. Write SQL command for statements (i) to (iv) and give the output for sql queries (v) to (viii).

Table: Consignor

I_ID	Item-NAME	Manufacturer	Price
PC01	Personal Computers	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computers	XYZ	32000
PC06	Personal Computers	COMP	37000
LC03	Laptop	PQR	57000

Table: Consignee

C_ID	Customer Name	City	I_ID
01	NROy	Delhi	LC03
06	Hsingh	Mumbai	PC03
12	R Pndey	Delhi	PC06
15	Csharma	Delhi	LC03
16	K Agrawal	Banglore	PC01

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

(i) To display the details of those customers whose city is Delhi?

(ii) To display the details of item whose price is in the range of 35000 to 55000(both value included).

(iii) To display the customer name city from table consignee and item name and price from table consignor

(iv) To increase the price of all item by 1000in the table consigner.

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

(i) SELECT COUNT (city) from consignee;

(ii) SELECT item name ,max (price),count(*) from consignor group by Itemname;

(iii) SELECT customer name , manufacturer from consignor,consignee
where consignor. I_ID= consignee.I_ID

(iv) SELECT item name, price*100 fom consignor where manufacturer ='ABC.'

Q 6 : (a) State and Verify Distributive Law. Verify using Truth Table. (2)

(b) Verify the following using Truth table: (1)

$$X+YZ=(X+Y).(X+Z)$$

(c) Obtain simplified form for a Boolean expression:

$F(x,y,z,w) = \Sigma(1,3,4,5,7,9,11,12,13,14)$ using K Map. (3)

(d) convert the following Boolean expression into its canonical sum of product(SOP): (2)

$$(U'+V+W).(U+V'+W).(U+V+W')$$

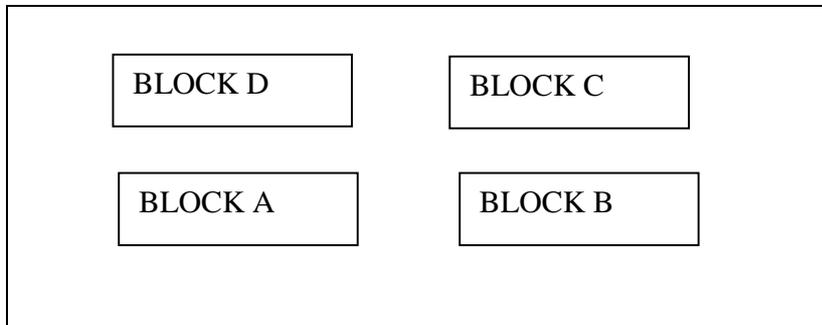
Q7: (a) Compare any two Switching techniques. (1)

(b) What is W3C? (1)

(c) List few system software which are free software? (1)

(d) What do you mean by IP Address? How is it useful in Computer Security? (1)

(e) ABC Systems Organization has set up its new center at Jabalpur for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below: (4)



Center to center distances between various blocks

Block A to Block B	80 m
Block B to Block C	250 m
Block C to Block D	50 m
Block A to Block D	190m
Block B to Block D	125m
Block A to Block C	90m

Number of Computers

Block A 25

Block B 50

Block C 150

Block D 10

(i) Suggest a cable layout of connections between the blocks.

(ii) Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason.

(iii) Suggest the placement of the following devices with justification

(i) Repeater (ii) Hub/Switch

(iv) The organization is planning to link its International Office situated in Mumbai, which wired communication link, you will suggest for very high speed connectivity?