

SAMPLE PAPER- 2014
CLASS-XII
COMPUTER SCIENCE (C++)

Time allowed: 3 hours

Maximum Marks: 70

General Instruction

1. Please check that this question paper contains 7 questions.
2. Please write down serial number of the question before answering it.
3. All questions are compulsory.
4. Programming language : C++

Q1

- (a) How const differ from #define? Justify your answer with suitable Example? 2
- (b) Name the header file(s) that shall be needed for successful compilation of the following C++ code. 1
- ```
void main()
{
 Int x=10, y=5;
 char no[]="1234";
 gotoxy(x,y);
 cout<<atoi(no);
}
```
- (c) Rewrite the following program after removing syntactical error(s) if any. Underline each correction. 2
- ```
#include "iostream.h"  
class manager  
{  
  int m_id = 0;  
  char name[10];  
  public:  
  void Register (int x=10, strcpy(char n[ ], "Sachin" )  
  {  
    m_id= x;  
    strcpy(name,n);  
  }  
  void Display( )  
  {cout<<m_id<<" : "<<name<<endl;}
```

```
};
void main()
{
manager * NEW;
Register();
NEW.Display();
}
```

(d) What will be the output of the following program:

2

```
#include<iostream.h>
#include<ctype.h>
typedef char str80[80];
void mian()
{
    char * notes;
    str80 str= "vR2Cool";
    int L=6;
    Notes= str;
    while(L>=3)
    {
        str[L]= (isupper(str[L]) ? tolower(str[L]): toupper(str[L]));
        cout<< Notes <<endl;
        L- -;
        Notes ++
    }
}
```

(e) In the following program, find the correct possible output(s) from the options:

2

```
#include<iostream.h>
#include<stdlib.h>
void main()
{
randomize();
char city[ ]={"PKD", "EKM", "TVM", "KOL", "CAL"};
```

```
int ZEN;
for(int i=0;i<3;i++);
{
ZEN=random(2)+1;
cout<<city[ZEN]<<"@";
}
}
```

- (i) PKD@ EKM @TVM@
- (ii) EKM @TVM@ EKM @
- (iii) TVM@KOL@CAL@
- (iv) TVM@ EKM @TVM@

(f) Find the output of the following program

3

```
#include< iostream .h>
struct Game
{
char Magic[20];
int score;
};
void main ( )
{
    Game M= { " Tiger", 500);
    char * choice, ch;
    choice = M.Magic;
    Choice[4]= 'P';
    Choice[2]='L'
    M.score + = 30;
    cout<< M. Magic << "\t"<<M.score<<endl;
    Game N= M;
    N.score-= 110;
    cout<<N.magic<<"\t"<<N.score<<endl;
}
```

Q2. Answer the following questions.

(a) What is data hiding and Abstract Data Type with one suitable real life example 2

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

```
class patient
{
    char disease[20];
    int age;
public:
    patient ( )                //Constructor1
    {
        strcpy(disease,"Cancer");
        age=18;
    }
    patient (char *s, int a)    //Constructor2
    {
        strcpy(disease,s);
        age = a ;
    }
    patient (patient &p);      //Constructor3
    ~ patient ( )              //Destructor
    {
        cout<<"Memory Deallocate"; }
};
```

```
void main( )
{
    patient p1("Fever",24);    //Statement1
    patient p3(p1);           //Statement2
}
```

- (i) When p3 object is created , which constructor will be invoked and why?
 (ii) Write complete definition for Constructor3

c. Define a class in C++ with the following description.:-

Data Member:-

- i. Busno – to store Bus No.
- ii. From – to store Place name of origin.
- iii. Type – to store Bus type such as ‘O’ for Ordinary.
- iv. Distance – to store the Distance in Kilometers.
- v. Fare – to store the Bus Fare

Member Function:-

- i. A Constructor function to initialize type as 'O' and Freight as 500.
- ii. A function CalcFare() to calculate Fare as per the following criteria.

Type	Fare
'O'	15*Distance
'E'	20*Distance
'L'	24*Distance

- iii. 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.
- iv. A function Show() to display the content of all the data members on screen.

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

4

```

class book
{ char Title[2];
char author[20];
int no-of_pages;
public:
void read();
void show();
};

class textbook : private book
{
int no_of_chapters, no_of_assignments;
protected:
int standard;
public:
void readtextbook();
void showtextbook();
};

class Physicsbook : public Textbook
{

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

```

```
void showphysicsbook();
```

```
};
```

- (i) Name the members, which can be accessed from the member functions of class Physics book.
- (ii) Name the members, which can be accessed by an object of class Textbook.
- (iii) Name the members, which can be accessed by an object of class Physics book.
- (iv) What will be the size of an object(in bytes) of class physics book?.

3. (a)

3

Write a function Get1from2() function in C++ to transfer the content from two arrays First[] and Second[] to array All[]. The even places (0,2,4.....) of array All[] should get the contents from the array First[] and odd places (1,3,5....)of the array All[] should get the contents from the array Second[]

Eg:

If the First [] array contains 30, 60,90,
And the Second [] array contains 10, 50,80,
Then All [] array should contain 30, 10, 60,50,90,80.

(b)

3

An array Array[20][15] is stored in the memory along with column with each element occupying 8 bytes. Find out the base address and address of the element Array[2][3] if the element Array[4][5] is stored at the address 1000

- c) Write a function **FindPlayer()** in C++ to find & display the record of a player from a dynamically allocated Queue implemented with the help of following structure. The function will receive the Front, Rear and the player ID to be search from Queue as arguments.

(Assume the queue is already created with some elements.)

4

```
struct Cricket
```

```
{
```

```
int Pid; // Player ID
```

```
char Pname[20]; // Player Name
```

```
char Type[20]; // Batsman or Bowler or Keeper or Others
```

```
Cricket *next;
```

```
}*Front, *Rear;
```

- d) Write a function SumOfAlternate () in C++ to find and return the sum of elements from all alternate elements of a two dimensional array passed as argument with size, starting from [0][0]. For eg 2

If the following is the content of the array

B[0][0]

B[0][1]

B[0][2]

4

5

1

B[1][0]	B[1][1]	B[1][2]
2	8	7
B[2][0]	B[2][1]	B[2][2]
9	6	3

The function should add elements B[0][0], B[0][2], B[1][1], B[2][0] and B[2][2].

- (e) Convert the following infix expression to its equivalent postfix expression Showing stack contents for the conversion: 2
- (A+B)*(C^(D-E)+F)-G**

4. (a).

- Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekg() and tellg() functions for performing the required task. 1

```
#include <fstream.h>
class Employee
{
int Eno;
char Ename[20];
public:
//Function to count the total number of records
int Countrec();
};
int Item::Countrec()
{
fstream File;
File.open("EMP.DAT",ios::binary|ios::in);
_____ //Statement 1
int Bytes =
_____ //Statement 2
int Count = Bytes / sizeof(Item);
File.close();
return Count;
}
```

- (b) Write a function in C++ to count the number of words that first character not started with upper case of vowel with present in a text file "NOTES.TXT". 2
- (c) 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. 3
- class STUD**
- ```
{
```

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

5.(a) What do you understand by Primary Key & Referential Integrity? Explain with example? 2

(b) Consider the following tables EMPLOYEE and SALGRADE and answer (b) and (c) parts of this questions:

**TABLE : EMPLOYEE**

| ECODE | NAME       | DESC         | SGRADE | DOJ        | DOB        |
|-------|------------|--------------|--------|------------|------------|
| 11    | AMIT       | EXECUTIVE    | S003   | 23-03-2003 | 13-01-1980 |
| 12    | RAM SHARMA | IT HEAD      | S002   | 12-02-2010 | 22-07-1987 |
| 13    | CHITRA     | RECEPTIONIST | S003   | 24-06-2009 | 24-07-1983 |
| 14    | NARESH     | GM           | S002   | 11-08-2006 | 03-03-1984 |
| 18    | PRIYA      | CEO          | S001   | 29-12-2004 | 19-01-1982 |

**TABLE : SALGRADE**

| SGRADE | SALARY | HRA   |
|--------|--------|-------|
| S001   | 56000  | 18000 |
| S002   | 32000  | 12000 |
| S003   | 24000  | 8000  |

(b) Write SQL commands for the following statements:

4

- To display NAME and DESC of those EMPLOYEEs, whose SALGRADE is either S002 or S003.
- To display the details of all EMPLOYEEs in descending order of DOJ.
- To display the content of the EMPLOYEEs table, whose DOJ is in between '09-02-2006' and '08-08-2009'.
- To add a new row with the following:  
19," Harish", "IT HEAD", 'S002', '09-09-2007', '21-04-1983'.

(c) Give the output of the following SQL queries:

2

- SELECT COUNT(SGRADE),SGRADE FROM EMPLOYEE GROUP BY SGRADE;
- SELECT NAME ,SALARY FROM EMPLOYEE E,SALGRADE S WHERE  
E.SGRADE=S.SGRADE AND E.ECODE<13;
- SELECT SGRADE,SALARY+HRA FROMSALGRADE WHERE SGRADE='S002';
- SELECT MIN(DOB),MAX(DOJ)FROM EMPLOYEE;

6 (a) State Involution Law and De-Morgan's Law verify algebraically . 2

(b) Write the SUM of Product form of the function  $F(x, y, z)$ , truth table representation of  $F$  is given below:

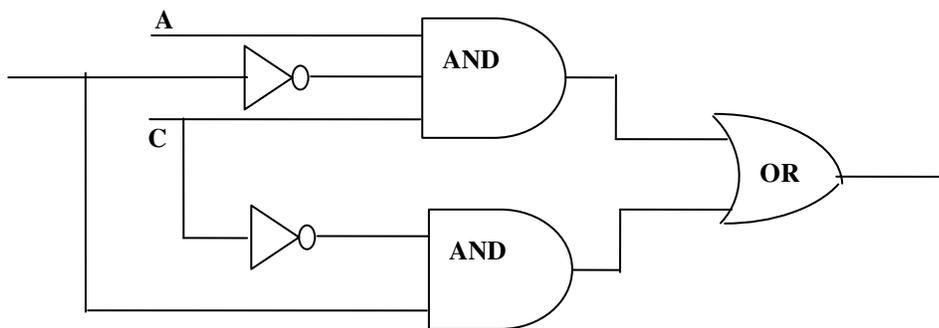
1

| X | Y | Z | F |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 |

(c) Write Circuit.

the equivalent Boolean Expression for the following Logic

2



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

$$F(A,B,C,D) = \sum (0,1, 2, 4, 5, 6, 7, 8, 10, 13, 15)$$

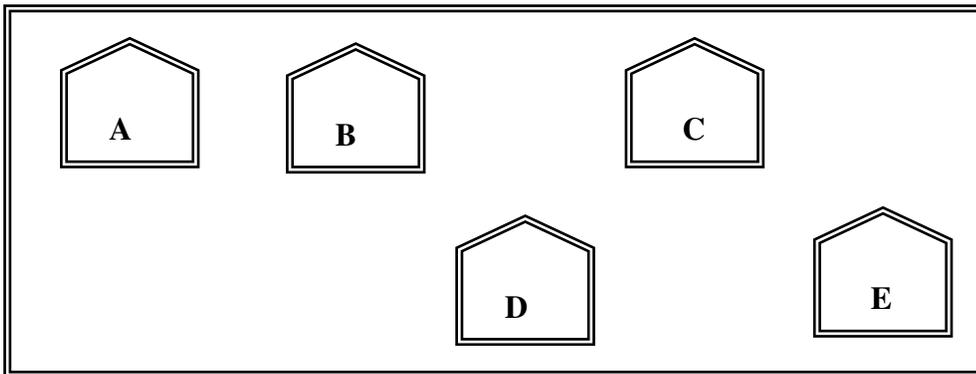
7. (a) What is the difference between the message switching and packet switching . 1

(b) Expand the following terms with respect to Networking. 2

- i). SIM
- ii). MAC
- iii). TDMA

iv). VoIP

- (c) Differentiate between Propriety Software Free Software? Explain with example? 1
- (d) Define two cyber law and cyber crime ? 2
- (e) Wipro Organisation has set up its new center in India for its office and web based activities. It has five buildings as shown in the diagram below: 4



| Distance between various buildings |         |
|------------------------------------|---------|
| A to B                             | 50 Mts  |
| B to C                             | 30 Mts  |
| C to D                             | 30 Mts  |
| D to E                             | 35 Mts  |
| E to C                             | 40 Mts  |
| D to A                             | 120 Mts |
| D to B                             | 45 Mts  |
| E to B                             | 65 Mts  |

| No of computers |     |
|-----------------|-----|
| A               | 55  |
| B               | 180 |
| C               | 60  |
| D               | 55  |
| E               | 70  |

Suggest a possible cable layout for connecting the buildings.

- i). Suggest the most suitable place to install the server of this organization with a suitable reason.
- ii). Suggest the placement of the following devices with justification.
- a) Hub/Switch

- b) Modem
- iv) The company wants to link its head office in 'A' building to its Office in Sydney
- (a) Which type of transmission medium is appropriate for such a link? What type of network this connection result into?
- (b) What is the difference between the LAN and MAN

**Paper Prepared by:**

[Sachin Kumr Mishra](#)

HOD (Computer Science)

**R.E.D. School, Jhajjar, Haryana**

[sachin29feb.2010@gmail.com](mailto:sachin29feb.2010@gmail.com)