

December Test-2014
COMPUTER SCIENCE (Theory)
Class-XII

Time Allowed: 3 Hours

Maximum Marks: 70

Note. (i) All questions are compulsory.
(ii) Programming Language: C++

Que-1.

- (a) Differentiate between call by value and call by reference with example. 2
- (b) Write the related library function name based upon the given information in C++ 1
- (i) To move the cursor to the given position in the current text window. This function is available in conio.h file.
- (ii) To append a copy of src (source string) to the end of dest (Target String). This function is available in string.h file.
- (c) Rajat has just started working as programmer in the WORLD SOFTWARE Company. In the company, he has got his first assignment to develop a small C++ module to find the smallest number out of a given set of numbers stored in a one dimensional array. Somehow he has committed a few logical mistakes while writing this code and so he is not getting the desired result from the code. Find out the mistakes and correct this C++ code so that it provides the desired result (do not add any new statement in the code) .Underline each correction made: 2

```
void SMALLFIND (int ARR[], int Size) //Statement 1
{
int SMALL = ARR[1];           //Statement 2
for (int C=2;C<Size;C++)      //Statement3
if (ARR[C]>SMALL)             // Statement4
ARR[C]=SMALL;                //Statement 5
return SMALL;                 // Statement 6
}
```

- (d) What will be the output of the following program? 2

```
#include<iostream.h>
#include<ctype.h>
#include<conio.h>
typedef char chr;
void main()
{ clrscr();
char *Notes;
char *str="SwachHBharat";
int L=11;
```

```
Notes=str;
while(L>=8)
{
str[L]=(isupper(str[L])?tolower(str[L]):toupper(str[L]));
cout<<Notes<<endl;
L--;
}
}
```

(e) Find the output of the following program:

3

```
#include<iostream.h>
#include<conio.h>
#include<ctype.h>
class Class
{
int Cno,total;
char section;
public:
Class(int no=1)
{
Cno=no;
section='A';
total=30;
}
void admission(int c=20)
{
section++;
total+=c;
}
void ClassShow()
{
cout<<Cno<<":"<<section<<":"<<total<<endl;
}
};
void main()
{
Class C1(5),C2;
C1.admission(25);
C1.ClassShow();
C2.admission();
C1.admission(30);
C2.ClassShow();
}
```

```
C1.ClassShow();
}
```

(f) In the following program, find the correct possible output(s) from the options. Give justification. 2

```
#include<iostream.h>
#include<stdlib.h>
void main()
{
randomize();
char *city[]={"PKD", "TVM", "KOL", "CAL"};
int ZEN;
for( int i=0; i<3;i++)
{
ZEN=random(2)+1;
cout<<city[ZEN]<< '@';
}
}
```

- i. PKD@TVM@TVM@
- ii. TVM@TVM@TVM@
- iii. TVM@KOL@KOL@
- iv. TVM@CAL@TVM@

Que.2

(a) How private inheritance is different from protected inheritance? Explain with example. 2

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

```
class patient
{
char disease[20];
int Age;
public:
patient() //Constructor 1
{
strcpy(disease, "Cancer");
Age=18;
}
patient(char*s, int a) //Constructor 2
{
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 Applicants with the following information:

4

Private members

- Rollno of type int
- Name of type character with size as 30
- Category of type character ('G' for general, S for Schedule caste, T for Schedule Tribe)
- Fees of the type float
- Function calc() to calculate fees of the student on the basis of category entered as :
 - Category 'G' then fees is 12000.
 - Category 'S' then Fees is 4000
 - Category 'T' then fees is 3500

Public members

- A constructor to initialize category as a blank character and fees as 0.
- A function to input Roll number, name and category of the student, and call calc().
- A function to display all the information of the applicant.

(d) Answer Question 1 to 4 after going through the following code:

4

```

class Drama
{char dname[20];
int Dduration;
protected:
char dactors[10][20];
public:
void enterdrama();
void displaydrama();};

class Realityshow
{char rname[15];
int rduration;

```

```
protected:
char Rparticipants[15][20];
public:
void enterreality();
void dispreality();};
```

```
class Tvprog: public Drama, private Realityshow
{char chnlgrp[20];
float pkgcost;
public:
void enterprog();
void dispprog();
};
```

- (i) Write the names of all members accessible from dispprog() of class Tvprog.
- (ii) Write the name of all data members accessible from object of class Tvprog.
- (iii) Calculate size of an object of class Tvprog.
- (iv) Which type of inheritance is illustrated in the above question? Also write the order for the call of the constructors when object of class Tvprog is declared.

Que. 3.

(a) Write a function Get1From 2() 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 []. 3

Example:

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) An array AR[-1..35][-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 AR[20][5], if an element AR[2][2] is stored at the memory location 1000. Find the total number of elements stored in AR and number of bytes allocated to AR. 3

(c) Convert the following infix expression to its equivalent postfix expression showing stack contents for the conversion : 2

$(A+B)*(C^(D-E)+F)-G*H$

(d) Write a function to insert an element in dynamic STACK containing names of employees. Also show the structure used to create elements of STACK. 3

(e) Write a user defined function AddEnd3(int A[][4], int N, int M) in C++ to find and display the sum of all the values, which are ending with 3 (i.e. unit place is 3) 3

For example if the content of array is:

23	16	13
19	5	3

The output should be 42

Que.4. (a) Observe the program segment given below carefully, and answer the questions that follows: 1

```

class Applicant
{
long Aid;           //Applicant's Id
char Name [20];    //Applicant's Name
float Score;       // Applicant's Score
public :
void Enroll();
void Disp();
void MarkScore(); //Function to change score
long R_Aid() {return Aid;}
};
void score_update (long Id)
{
fstream File;
File.open ("Appli.DAT", ios::binary|ios::in|ios::out);
Applicant A;
int Record=0,Found=0;
while(!Found && File.read ((char*)&A, sizeof(A)))
{
if(Id==A.R_Aid())
{cout<< "enter new score";
A.MarkScore();
_____ //Statement 1
_____ //Statement 2
Found =1;
}
Record ++;
}
if (Found==1)
cout<< "Record updated";
File.close();
}

```



Write the statement to position the file pointer at the beginning of the Record for which the applicant'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 and display the number of four letter words in the file "VOWEL.TXT". 2
Example:

If the file contains:

A boy is playing there. I love to eat pizza. A plane is in the sky.

Then the output should be: 1

(c) Write a program in C++ to read and display the detail of the user whose status is 'A' (i.e. Active) on a binary file "USER.DAT", assuming the binary file is containing objects of class USER, which is defined as follows:

```
class USER
{
int UID;
char Uname[20];
char Status;           //User Type: A Active | I Inactive
public:
void Register();
void show();
char Getstatus () {return Status;}
};
```

Que.5.

(a) Explain the concept of Cartesian Product between two tables, with the help of appropriate example. 2

(b) Consider the following tables Worker and Paylevel. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (vi) to (viii). 6

Table: Worker

ECODE	NAME	DESIG	PLEVEL	DOJ	DOB
11	Radhe Shyam	Supervisor	P001	13-Sep-2004	23-Aug-1981
12	Chander Nath	Operator	P003	22-Feb-2010	12-Jul-1987
13	Fizza	Operator	P003	14-Jun-2009	14-Oct-1983
15	Ameen Ahmed	Mechanic	P002	21-Aug-2006	13-Mar-1984
18	Sanya	Clerk	P002	19-Dec-2005	09-Jun-1983

Table: Paylevel

PLEVEL	PAY	ALLOWANCE
P001	26000	12000
P002	22000	10000

P003	12000	6000
------	-------	------

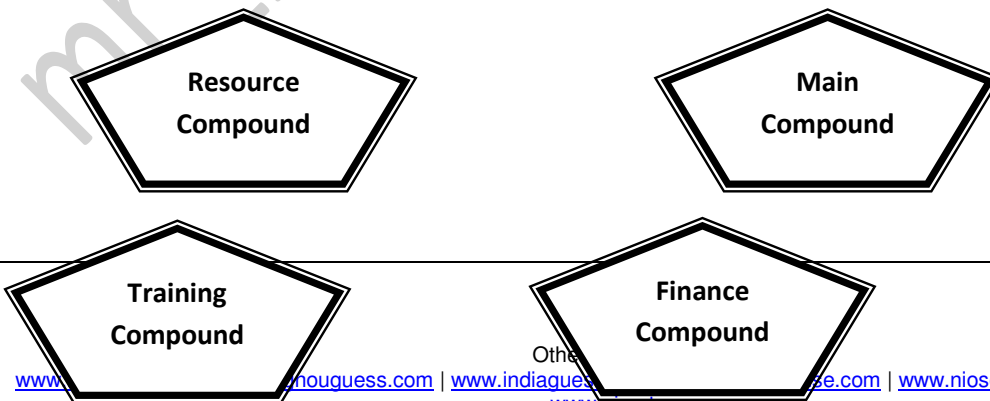
- (i) To display the details of all Workers in descending order of DOB.
- (ii) To display Name and Desig of those Workers, whose Plevel is either P001, or P002.
- (iii) To display the content of all the workers table whose DOB is in between '19-Jan-1984' and '18-Jan-1987'.
- (iv) To add a new row with the following:
19,'Daya Kishore', 'Operator', 'P0003', '19-Jun-2008','11-Jul-1984'
- (v) SELECT COUNT(PLEVEL), PLEVEL FROM WORKER GROUP BY PLEVEL;
- (vi) SELECT MAX(DOB),MIN(DOJ) FROM WORKER;
- (vii) SELECT NAME, PAY FROM WORKER W, PAYLEVEL P
WHERE W.PLEVEL=P.PLEVEL AND P.ECODE<13 ;
- (viii) SELECT PLEVEL, PAY+ALLOWANCE FROM PAYLEVEL WHERE PLEVEL='P003';

Que. 6

- (a) Name the law shown below and verify using Truth table. 2
 $X.(Y+Z) = X.Y+X.Z$
- (b) Draw the Logic circuit for the following Boolean Expression: 2
 $AB(C'D+B'C) + BC$
- (c) Write the equivalent Canonical Sum of product for the following product of sum expression: 1
 $F(X, Y, Z) = \Pi(1,3,6,7)$
- (d) Reduce the following Boolean expression using k-Map: 3
 $F(U, V, W, X) = \Pi(0,1,4,5,6,7,8,11,12,13,14,15)$

Que. 7

- a) Write two characteristics of Wi-Fi. 1
- b) Expand the following terms: 1
(i) CDMA (ii) FSF
- c) What is the difference between Worm and Virus? 1
- d) Which type of network (out of LAN, PAN, MAN and WAN) is formed, when you connect two mobiles using Bluetooth to transfer a video? Also Expand. 1
- e) "Learn Together" is an educational NGO. It is setting up its new campus at Jabalpur for its web based Activities. The campus has four compounds as shown in the diagram below: 4



Center to center distances between various Compounds as per architectural drawings (in Meter) is as follows:-

Main Compound to Resource Compound	110m
Main Compound to Training Compound	115m
Main Compound to Finance Compound	35m
Resource Compound to Training Compound	25m
Resource Compound to Finance Compound	135m
Training Compound to Finance Compound	100 m

Number of Computers in each of the Compound is follows:

Main Compound	5
Resource Compound	15
Training Compound	150
Finance Compound	20

- Suggest an ideal cable layout for connecting these compounds.
 - Suggest the most suitable place (i.e. school/centre) to install the server of this NGO with suitable reason.
 - Suggest the placement of the following devices with justification:
 - a) Repeater
 - b) Hub/Switch
 - The NGO is planning to connect its International office situated in Mumbai, which out of the following wired communication link, you will suggest for very high speed connectivity?
 - a) Telephone Analog Line b) Optical Fibre c) Ethernet Cable
- f) Write names of any two popular Open Source Software, which are used as Operating System. 1
- g) Write any two important characteristics of Cloud Computing. 1