**Sample Paper- 2013**

**Subject: Computer Science**

**Class 12th**

Time: 3 hours Max. Marks: 70

Instructions:

* All questions are compulsory
* Programming language is C++

Q.1 (a) What is difference between Actual and Formal parameter? Also, give a suitable C++ code to illustrate both. 2

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

 (i) strlen() (ii) frexp

 (c) Rewrite the following program after removing the syntactical errors (if any). Underline each correction. 2

 #include<iostream.h>

 struct pixels

 {

 Int color, style;

 }

 Void showpoint(int p);

 {

 cout<<p.color,p.style<<endl;

 }

 (d) Find the output of the following program: 3

 #include<iostream.h>

 void change(int a[ ], int count)

 {

 for(int c=1;c<count; c++)

 a[c-1]+=a[c];

 }

 void main()

 {

 int b[ ]={3,4,5}, c[ ]={10,20,30,40}, d[ ]={900,1200};

 change(b,3);

 change(c,4);

 change(d,2);

 for(int g=0;g<3;g++)

 {

 cout<<b[g]<<”#”;

 cout<<endl;

 }

 for(int g=0;g<4;g++)

 {

 cout<<c[g]<<”#”;

 cout<<endl;

 }

 for(int g=0;g<2;g++)

 {

 cout<<d[g]<<”#”;

 cout<<endl;

 }

 }

 (e) Find the output of the following program: 2

 #include<iostream.h>

 void execute(int m)

 {

 int t = m;

 m+=t;

 }

void main()

 {

 int A=50, B=20;

 execute(b);

 cout<<A<<B<<endl;

 }

(f) In the following program, if the value of N given by the user is 20, what maximum and minimum vales the program could possibly display? 2

 #include<iostream.h>

 #include<stdlib.h>

 void main()

 {

 In N, g;

 ran();

 cin>>N;

 g=ran(N-10)+10;

 cout<<g<<endl;

 }

Q.2 (a) What do you understand by Polymorphism? Give a suitable example of the same. 2

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

 class match

 {

 int time;

 public:

 match() //Function 1

 {

 time=0;

 cout<<”Match commences”<<endl;

 }

 void detail() //Function 2

 {

 cout<<”Inter Section Football Match”<<endl;

 }

 match(int a) //Function 3

 {

 time=dur;

 cout<<”Another Match begins now”<<endl;

 }

 ~match() //Function 4

 {

 cout<<”Like Previous Match”<<endl;

 }

 };

1. In OOPs, what is Function 4 referred as and when does it get invoked/called?
2. In OOPs, which concept is illustrated by unction 1 and Function 3 together?

 (c) Define a class TEST in C++ with following description: 4

 Private Members

 \* TestCode of integer typr

 \* Description of string type

 \* NoCandidate of integer type

 \* CenterTeqd of integer type

 Public Members

 \* A function Schedule() to allow user to enter values for TestCode

 \* A function DispTest() to allow user to view the content of all the data members.

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

class PUBLISHER

{

 double Turnover;

 char Pub[12];

protected:

 void Register();

public:

 PUBLISHER();

 void Enter();

 void Display();

};

class BRANCH

{

 char City[20];

protected:

 float Employee;

public:

 BRANCH();

 void Haveit();

 void Giveit();

};

class AUTHOR : private BRANCH, public PUBLISHER

{

 Int ACode;

 char Aname[20];

 float Amount;

public:

 AUTHOR();

 void Start();

 void Show();

};

1. Write the names of data members which are accessible from objects belonging to class ***AUTHOR.***
2. Write the names of all the member functions which are accessible from objects belonging to class ***BRANCH***.
3. Write the names of all the members which are accessible from member functions of class ***AUTHOR***.
4. How many bytes will be required by an object belonging to class ***AUTHOR***?

Q.3 (a) Write a function in C++ to combine the contents of two equi-sized arrays X and Y by their corresponding

elements as the formula X[i]+Y[i], where the value of I varies from 0 to N-1 and transfer the resultant

content in the third same sized array Z. 3

(b) An array P[20][30] is stored in the memory along the column with each of the element occupying

2 bytes, find the Base address of the array, if an element P[2][10] is stored at the memory location 5000. 3

(c) Write a function in C++ to find sum of rows from a two dimensional array. 4

(d) Write a function in C++ to print the left diagonal elements of a double dimension array of equi-sized. 2

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

 True, False, OR, True, True, False, NOT, OR, AND

Q.4 a. Reduce the following Boolean Expression using K-Map: 1

 F(A,B,C,D) = (0,1,2,10,11)

b. An array A[50][100] is stored in the memory along the column with each of the element occupying

 2 bytes, find the Base address of the array, if an element A[20][50] is stored at the memory location 1000. 2

c. What do you understand by call by value and call by reference. Also, give a suitable C++ code to illustrate

 both. 3

Q.5 a. What do you understand by candidate key? Give a suitable example to illustrate the same. 2

Consider the following tables GAMES and PLAYER and answer (b) and (c) parts of this question:

 **Table: GAMES**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **GCode** | **GameName** | **Type** | **Number** | **PrizeMoney** | **ScheduleDate** |
| 101 | Carrom | Indoor | 2 | 5000 | 23-Jan-2004 |
| 102 | Badminton | Indoor | 2 | 12000 | 12-Dec-2003 |
| 103 | Table Tennis | Indoor | 4 | 8000 | 14-Feb-2004 |
| 105 | Chess | Indoor | 2 | 9000 | 01-Jan-2004 |
| 108 | Lawn Tennis | Outdoor | 4 | 25000 | 19-Mar-2004 |

 **Table: PLAYER**

|  |  |  |
| --- | --- | --- |
| **PCode** | **Name** | **GCode** |
| 1 | Nabi Ahmad | 101 |
| 2 | Ravi Sahai | 108 |
| 3 | Jatin | 101 |
| 4 | Nazneen | 103 |

 b. (i) To display the names of all GAMES with their codes. 1

 (ii) To display details of those GAMES which are having prize money more than 7000. 1

1. To display the content of the GAMES table in ascending order of schedule date. 1
2. To display sum of Prize money for each type of GMAES. 1

c. (i) SELECT COUNT (DISTINCT Number) FROM GAMES; 0.5

 (ii) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM GAMES; 0.5

 (iii) SELECT GameName, Type FROM GAMES G, PLAYER P

 WHERE G.GCode=P.PCode AND P.Number=10; 0.5

1. SELECT DISTINCT GCode FROM PLAYER; 0.5

Q.6 a. State and verify Absorption Laws using truth table. 2

 b. Write the equivalent Boolean Expression for the following logic circuit 2



1. Write the POS form of a Boolean function F, which is represented in a truth table as follows: 1

|  |  |  |  |
| --- | --- | --- | --- |
| **P** | **Q** | **R** | **G** |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |
| 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) = (0,1,2,4,5,6,8,10)

Q.7 a. Define the term hacking? How a Hacker is different from Cracker. 1

 b. Write two examples of Client side scripting languages. 1

 c. How firewall protect our networking. 1

 d. What do you mean by IP address? Give one example. 1

 e. Oxford University has set up its new center at Mumbai for its office and web based activities.

 The company compound has 4 buildings as shown in the diagram below: 4

Mumbai

**A**

**B**

**D**

**C**

 Distance between buildings is as follows: No. of computers per building is as follows:

|  |  |
| --- | --- |
| A and B | 50m |
| B and C | 70m |
| C and D | 25m |
| A and D | 170m |
| B and D | 152m |
| A and C | 90m |

|  |  |
| --- | --- |
| A | 12 computers |
| B | 20 computers |
| C | 24 computers |
| D | 10 computers |

1. Suggest a cable layout of connections between the buildings.
2. Suggest the most suitable place (i.e., building) to house the server of this organization with a suitable reason.
3. Suggest the placement of the following devices with justification:
	1. REPEATER
	2. HUB/SWITCH
4. The organization is planning to link 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.

 f. How Trojan Horses are different from Worms. 1

 g. Give two examples of Proprietary Software. 1

**Tips:**

1. Attempt all parts of a question at one place.
2. As C++ is a case sensitive language, special care should be taken while writing codes.
3. Don’t leave any question or part unattempted, as no negative marking is there.
4. Answer must be to the point i.e., don’t write anything extra which is not asked.
5. Don’t make any hurry while attempting questions as a small error will spoil your answer.
6. Read carefully before attempting questions.
7. Cross check the output question at least one time.



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