**SAMPLE PAPER-2013**

**Class-XII**

**Subject : Computer Science**

Time allowed : 3 hrs. Maximum Marks : 70

**General Instruction**

1. Please check this question paper contains 09 printed pages.
2. Code number given on the right side of question paper should be written on

 the title page of the answer – book by the candidate

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

**1. (a)** What is the significance of private, protected and public specifiers in a class? **2**

 **(b)** Name the header file to which the following belong : **1**

 (i) random() (ii) floor()

 **(c)** Rewrite the following program after removing the syntactical error(s) if any, underline

 each correction.

 #include <iostream.h> **2**

 void main()

{

 int i = 99, a;

 float u = 10.0;

 cin(a);

 int b = sqrt(a);

 while a <= j

 {

 a += 10;

 u = \*b;

 b = sqrt(a);

 }

}

 **(d)** Find the output of the program. **3**

#include <iostream.h>

#include <string.h>

#include <ctype.h>

void funnystr(char \*s, int n = 2)

{

 int i = n;

 while(i < strlen(s))

 {

 s[i] = '-';

 i = i + n;

 }

 i = 0;

 while(s[i] != '\0')

 {

 if(s[i] > 'A' && s[i] < 'P')

 s[i] = tolower(s[i]);

 else if(s[i] > 'a' && s[i] < 'p')

 {

 if(i % 3 == 0)

 s[i] = tolower(s[i-1]);

 else

 s[i] = tolower(s[i]);

 }

 i++;

 }

}

void main()

{

 char str[] = "MiCroSoFT";

 funnystr(str,3);

 cout<<str;

}

 **(e)** Find the output of the following program. **2**

#include <iostream.h>

int update1(int b3)

{

 int temp;

 temp = b3 - ( b3%10 + 2)

 return temp;

}

void update2(int s1,int &s2,int s3=40)

{

 if(s1 > s2)

 s1 = s1 - 2;

 else

 s1 = s2 - s1;

 if(s2 > s3)

 s2 = s2 - s3;

 else

 s2 = s3 - s2;

 s3 = update1(s3);

 cout<<s1<<" ; "<<s2<<" ; "<<s3<<endl;

}

void main()

{

 int x,y,z;

 x=100;y=200;z=300;

 update2(x,z,y);

 cout<<x<<" ; "<<y<<" ; "<<z<<endl;

 update2(y,z);

 cout<<x<<" ; "<<y<<" ; "<<z<<endl;

}

**(f)** Observe the following program and find out, which option or options out of (i) to (iv) will not be expected output(s) from the program? What will be the minimum and maximum value assigned to the variable Sequence. **2**

#include<iostream.h>

#include<stdlib.h>

void main( )

{

 int sequence, select[4] = {25, 90, 30, 45};

 randomize( );

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

 {

 sequence = random( 4 - c);

 cout<< select[sequence] << "@";

 }

}

( i ) 45@90@30@25@ (ii) 90@25@90@25@

(iii) 30@30@25@25@ (iv) 30@30@90@25@

**2. (a)** Reusability of classes is one of the major properties of OOP. How is it implemented in

 C++? **2**

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

 class serial

 {

 int serialcode;

 char title[20];

 float duration;

 int no\_of\_episode;

public:

 serial() //function 1

 { duration = 30;

 no\_of\_episode = 10;

 }

 serial(int d, int noe) //function 2

 { duration = d;

 no\_of\_episode = noe;

 }

 serial( &s1) // function3

 { }

 ~serial() // function 4

 {

 cout<<”Destroying Object”<<endl;

 }

 };

1. Complete definition of function 3
2. Give example how function1 and function 2 get executed when object is created.

**(c)** Define a class CARRENTAL in c++ with the following description: **4**

 private members:

 CarId of type int

 AboutCar of type string

 Cartype of type string

 Rent of type float

 A member function AssignRent( ) to assign the value of Rent as per the following

 CArtype Rent

 Small 1000

 Van 800

 SUV 2500

 public Members

* A function Getcar() to allow user to enter the value for carid, Aboutcar, Cartype and call function Assignrent() to assign rent.
* A function showcar( ) 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 livingbeing

{ char specification[20];

 int averageage;

 public:

 void read();

 void show();

};

class ape : private livingbeing

{

 int no\_of\_organs, no\_of\_bones;

 protected:

 int iq\_level;

 public:

 void readape();

 void showape();

};

class human : public ape

{

 char race[20];

 char habitation[30];

 public:

 void readhuman();

 void showhuman();

};

1. Name the members which can be accessed from the member functions of class human.
2. Name the members, which can be accessed by an object of class human.
3. What will be the size of an object (in bytes) of class human.
4. Name the class(es) that can access read() declared in livingbeing class.

**3 (a)** Write a function in c++ which accepts a 2D array of integers, number of rows and

 number of columns as arguments and assign the elements which are divisible by 3 or 5

 into a one dimensional array of integers. **3**

 If the 2D array is 

 The resultant 1D arrays is 12 , 3 , 9 , 24 , 25 , 45 , 9 , 5 , 18

**(b)** An array S[40][30] is stored in the memory along the row with each of the element occupying 2 bytes, find out the memory location for the element S[15][5], if an element S[20][10] is stored at the memory location 5500. **3**

**(c)** Define functions stackpush( ) to insert nodes and stackpop ( ) to delete nodes, for a linked list implemented stack having the following structure for each node. **4**

struct ticket

{

 long ticketno;

 char name[40];

 ticket \*next;

};

(d) Write a function TRANSFORM(int A[][3], int N, int M) in c++ to swap the elements of first and last row. **2**

**(e)** Evaluate the following Postfix expression showing the stack contents. **2**

 2 , 4 , \* , 3 , ─ , 10 , 5 , + , /

**4 (a)** Observe the program segment givenbelow carefully and answer the questions that following: **1**

**#include<fstream.h>**

class Book;

{

 int Bno;

 char Title[20];

public:

 void Enterval( ) { cin>> Bno; gets(title)}

 void showval( ) { cout<<Bno<<"#"<<Title<<endl;}

};

void search(int recno)

{

 fstream File;

 Book B;

 File.open("Book.Dat", ios::in|ios::binary);

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ; // statement 1

 File.read((char\*)&B,sizeof(B));

 B.showval();

 File.close();

}

Write statement 1 to position the file poimter to the beginning of the desired record to be read, which sent as parameter of the function search.

**(b)** Write a function in C++ to count and display the number of words starting with alphabet ‘u’ or ‘U’ or ‘t’ or ‘T’ or ‘k’ or ‘K’ present in a text file “poem.txt”. **2**

Example

If the file “poem.txt” contains the following lines,

 Kamlesh is captain of Udaipur cricket team.

 Tourist generally visit Zoo of udaipur.

 Today telephone is dead, please note down complain.

The function should display the output as **7**

**(c)** Given a binary file “AMOUNT.DAT”,containing records of the given class outstand type.

class outstand **3**

{

 int memno;

 int outamt;

 public:

 void getit()

 { cin>>memno>>outamt; }

 void putit()

 { cout<<memno<<outamt; }

 int returnamt()

 { return outamt; }

};

Write a function in C++ to write objects having outamt more than Rs. 10,000 into CRITICAL.DAT file

**5** **(a)** What is a relation? What is the difference between a tuple and an attribute? **2**

(b) Consider the following tables EMPLOYEE and DESIG. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii) 6

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| W\_ID | FIRSTNAME | LASTNAME | CITY |
| 102 | SAM | TONES | PARIS |
| 105 | SARAH | ACKERMAN | NEW YORK |
| 144 | MANILA | SENGUPTA | NEW DELHI |
| 210 | GEORGE | SMITH | HOWARD |
| 255 | MARY | JONES | HUSTON |
| 300 | ROBERT | SAMUEL | WASHINGTON |
| 335 | HENRY | WILLIAMS | BOSTON |
| 400 | RONNY | LEE | NEW YORK |
| 451 | PAT | THOMPSON | PARIS |

DESIG

|  |  |  |  |
| --- | --- | --- | --- |
| W\_ID | SALARY | BENEFITS | DESIGNATION |
| 102 | 75000 | 15000 | MANAGER |
| 105 | 85000 | 25000 | DIRECTOR |
| 144 | 70000 | 15000 | MANAGER |
| 210 | 75000 | 12500 | MANAGER |
| 255 | 50000 | 12000 | CLERK |
| 300 | 45000 | 10000 | CLERK |
| 335 | 40000 | 10000 | CLERK |
| 400 | 32000 | 7500 | SALESMAN |
| 451 | 28000 | 7500 | SALESMAN |

1. Display FirstName and City of Employee having salary between 50,000 and 90,000
2. Display details of Employees who are from “PARIS” city.
3. Increase the benefits of employee having W\_ID = 210 by 500.
4. Count number of employees whose name starts from character ‘S’.
5. Select MAX(salary) from desig;
6. Select FirstName from employee, desig

where designation = ‘MANAGER’ AND employee.W\_ID = desig.W\_ID;

1. Select COUNT (DISTINCT designation) from desig;
2. Select designation, SUM(salary) from desig

Group by designation

Having count (\*) > 2;

6 (a) State Involution Law and verify the same using truth table. 2

(b) Write the Product of Sum 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 the equivalent Boolean Expression for the following Logic Circuit. **2**

C

A

OR

AND

AND

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

 F(A,B,C,D) = ∑ ( 0 , 2, 4, 5, 6, 7, 8, 10, 13, 15)

7. (a) Define the term Bandwidth. Give any one unit of Bandwidth. 1

(b) When do you prefer XML over HTML and why? 1

(c) How does firewall protected our network ? 1

(d) What is the importance of URL in networking. 1

(e) Standard Bank 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:

 A

 E

 D

 B

 C

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

|  |
| --- |
| 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 |

1. Suggest a possible cable layout for connecting the buildings. 1
2. Suggest the most suitable place to install the server of this organization with a suitable reason. 1
3. Suggest the placement of the following devices with justification. 1
	1. Hub/Switch
	2. Modem

iv) The company wants to link its head office in ‘A’ building to its Office in Sydney 1

1. Which type of transmission medium is appropriate for such a link?
2. What type of network this connection result into?

(f) Compare freeware & Shareware. 1

(g) How are Trojan Horses different from Wroms ? Mention any one difference. 1