

COMMON PRE-BOARD EXAMINATION 2017-2018**COMPUTER SCIENCE****CLASS XII**

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

- i. All the questions are compulsory
- ii. C++ program should be written with proper syntax.

Q1 a) What is the purpose of using a typedef command in C++? Explain with (02)

Suitable example.

b) Name the header files that should be used for the following code. (01)

```
void main()  
{ char str [ ] = "C++";  
  cout<<setw(20) <<str;  
}
```

c) Rewrite the following program after removing the syntactical error(s) if any. (02)

Underline each correction.

```
#include<iostream.h>  
const int max 10;  
void main()  
{ int vector[max];  
  vector = { 20, 50, 10, 30, 40};  
  for( c =max – 1; c>=0; c--)  
    cout<<<<vector[c];
```

- d) Find the output of the following program (03)

```
struct dress
{
    int size, cost, tax, total_cost;
};
void change(dress &d, int flag = 1)
{
    if(flag ==1)
        d.cost +=20;
    d.total_cost = d.cost +d.cost*d.tax/100;
}
void main( )
{
    dress s1 = {40, 580, 8}, s2 = {34, 550, 10};
    change(s1);
    cout<<s1.size<<','<<s1.cost<<','<<s1.total_cost<<endl;
    change(s2,2);
    cout<<s2.size<<','<<s2.cost<<','<<s2.total_cost<<endl;
}
```

- e. Give the output of the following code segment (02)

```
void main()
{
    char * name = "IntRAneT";
    for(int x =0; x<strlen(name); x++)
        if(islower(name[x]))
            name[x] = toupper(name[x]);
    else
        if(isupper(name[x])
            if(x%2 == 0)
                name[x] = tolower(name[x]);
            else
                name[x] = name[x-1];
    puts(name);
}
```

```
}
```

- f) Observe the following program and find outputs out of (i) to (iv) will not be expected from the program? What will be the minimum & maximum value assigned to the variable chance? (02)

```
void main( )  
{  
    randomize( );  
    int arr[] = { 9, 6}, n;  
    int chance = random(2) + 10;  
    for(int c = 0; c<2; c++)  
    { n = random(2);  
      cout<< arr[n] + chance<<"#";  
    }  
}
```

(i) 9#6# (ii) 19#17# (iii) 19#16# (iv) 20#16#

2. a) How encapsulation and abstraction are implemented in C++ language? (02)
Explain with an example.

- b) Answer the questions (i) and (ii) after going through the following C++ class (02)
class stream

```
{    int streamcode;  
    char streamname[20]; float fees;  
public:  
    stream() //function 1  
    { streamcode =1;  
      strcpy(streamname, "Delhi");  
      fees = 1000; }  
    void display(float c) //function 2  
    { cout<<streamcode<<" :"<<streamname<<" :"<<fees<<endl; }  
    ~stream() //function 3  
    { cout<<"End of stream object"<<endl; }  
    stream(int sc, char s[ ], float f); //function 4
```

(i) In OOP, what are function 1 and function 4 combined together referred as?

Write the definition of function 4

(ii) Write a statement to invoke function 4.

c) Define a class customer with the following specifications (04)

private members: customer_no integer, cname -> char[20], qty -> integer

price, totalprice, discount, netprice -> float

public members: a constructor to assign initial values of customer_no as 111,

cname as "Leena", qty, price, totalprice and netprice as 0

input() → to read data members and to call caldiscount ()

caldiscount() to calculate netprice and discount according to totalprice

totalprice = price * qty;

totalprice	discount
------------	----------

>= 50000	25% of totalprice
----------	-------------------

25000 to 50000	15% of totalprice
----------------	-------------------

Lessthan 25000	10% of totalprice
----------------	-------------------

Netprice = totalprice – discount

Show () → to display customer details

d) Answer the questions (i) to (iv) based on the following code (04)

```
class AC
```

```
{ char model [10];
```

```
  char dop[10];
```

```
  char company[20];
```

```
  public:
```

```
    AC();
```

```
    void entercarddetail();
```

```
    void showcarddetail();
```

```
};
```

```
class accessories: protected AC
```

```
{
```

```
  protected:
```

```
    char stabilizer[30];
```

```

        char AC_cover[20];
    public:
        float price;
        accessories();
        void enteraccessoriesdetails();
        void showaccessoriesdetails();
};
class dealer : public accessories
{
    int no_of_dealers;
    char dealers_name[20];
    int no_of_products;
    public:
        dealer();
        void enterdetails();
        void showdetails();
};

```

- (i) How many bytes will be required by an object of class dealer and class accessories?
 - (ii) Which type of inheritance is illustrated in the above C++ code? Write the base class and derived class name of class accessories.
 - (iii) Write name of all the members which are accessible from the objects of class dealer.
 - (iv) Write names of all the members accessible from members functions of class dealer.
- 3) a) Write a function half_exchange of to swap the elements of the first half of an 1D array with its second half. The array and its size are passed as argument (03)
- b) An array mat[50][20] is stored in the memory along the row with each of its elements occupying 8 bytes. Find out the location of mat[10][15], if mat[0][0] is stored at 4200 (02)
- c) Write member functions to perform POP and PUSH operations in a (04)

dynamically allocated stack containing the objects of the following structure.

```
struct game
{ char gamename[30];
  int numofplayer;
  game *next; };
```

- d) Write a function swap() to exchange the elements above the main diagonal with (03)
the elements below the main diagonal. The matrix and its size are passed as
arguments

i/p	1 2 3	output	1 4 7
	4 5 6		2 5 8
	7 8 9		3 6 9

- e) Evaluate the following postfix expression . Show the status of stack after (02)
execution of each operation separately

2,13,+, 5, -, 6, 3,/,5*+

- 4 a) Write the command to place the file pointer at the 10th and 4th record starting (01)
Position using seekp() or seekg() command. File object is 'file' and record
name is "Student"
- b) Write a function in C++ to count and display the number of three letter words (02)
in the file vowel.txt
- c) Given the binary file "car.dat", containing records of the following class car type (03)

```
class car
{ int cno;
  char cname[20];
  float mileage;
public:
  void enter ()
  { cin>>cno; gets(cname); cin>>mileage; }
  void display () { cout<<cno<<" : "<<cname<<":."<<mileage;}
  int return_mileage() { return mileage;}
};
```

Write a function in C++ that would read contents from the file "car.dat" and

Display the details of car with mileage between 100 to 150.

- 5 a) Write about primary key & candidate key. (02)
b) Consider the following tables dress and material. Write SQL commands (06)
for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

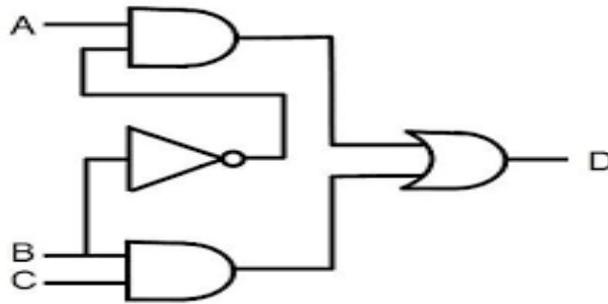
Table: Dress

Dcode	Description	Price	Mcode	Launchdate
10001	Formal Shirt	1250	M001	2008-01-12
10020	Frock	750	M004	2007-09-07
10012	Informal Shirt	1450	M002	2008-06-06
10019	Evening Gown	850	M003	2008-06-06
10090	Tulip Skirt	850	M002	2007-03-31
10007	Formal Pant	1450	M001	2008-03-09

Table: Material

Mcode	Type
M001	Terelene
M002	Cotton
M003	Silk
M004	Polyester

- (i) To display dcode and description of each dress in ascending order of dcode
(ii) To display the material type of frock & evening gown
(iii) To increase the price of all the dresses by 5%
(iv) To display the average price of each material, display with mcode
(v) `SELECT SUM(PRICE) FROM DRESS WHERE MCODE = 'M001';`
(vi) `SELECT DESCRIPTION, TYPE FROM DRESS , MATERIAL WHERE
DRESS.DCODE =MATERIAL.MCODE AND DRESS.PRICE >=1250;`
(vii) `SELECT MAX(MCODE) FROM MATERIAL;`
(viii) `SELECT COUNT(DISTINCT PRICE) FROM DRESS;`
- 6 a) State and verify absorption law using truth table. (02)
b) Write the equivalent Boolean expression for the following logic circuit (02)



- c) Write the POS form of Boolean function with 3 variables(X, Y, Z) , which gives zero output for all even number of zero inputs. (01)
- d) Reduce the following Boolean expression using K-map (03)
- $$H(U, V, W, Z) = \sum (0, 1, 4,5,6,7,11,12,13,14,15)$$
- 7 a) Which out of the following should be used to have an audio – visual chat with A person far away? (i) email (ii) VoIP (iii) FTP (01)
- b) Name one client side scripting and server side scripting language (01)
- c) Write about any 2 cases of cyber crime (01)
- d) Differentiate star topology & bus topology (01)
- e) Answer the questions based on the following case study (04)

Indian School in Mumbai is starting up network between its different wings, there are four buildings named as **Senior**, **Junior** , **Admin** and **Hostel** as shown below:



The distance between various building are as follows:

Admin to Senior	200m
Admin to Junior	150m
Admin to hostel	60 m
Senior to Junior	250 m

Senior to Hostel	350m
Junior to Hostel	350m

Number of computers in each building

Senior	130
Junior	60
Admin	150
Hostel	50

- (i) Suggest the cable layout of connections between the buildings
- (ii) Suggest the most suitable place to house the server and give suitable reason
- (iii) Suggest the placement of following devices (a) Repeater (b) Switch/Hub
- (iv) The organization has inquiry office in another city about 50 to 60 km away in a hilly region. Suggest suitable transmission media to interconnect to school and inquiry office .
- f) Give one suitable example of each URL & domain name. (01)
- g) Name two open source software along with their application (01)