**Half Yearly Examination -2019**

**Class – XII ( 083)**

**Time :** 3 Hrs **M.Marks**:70

**Note:**

1. All questions are compulsory
2. Programming Language is C++
3. Total Printed pages : 5

|  |  |  |  |
| --- | --- | --- | --- |
| Q1 | A | Write the type of C++ Operators (Arithmetic, Logical, and Relational Operators) from thefollowing:  (i) ! (ii) != (iii) && (iv) % | 2 |
|  | B | Observe the following program very carefully and write the name of those header file(s), which are essentially needed to compile and execute the following program successfully:  void main()  { char text[20], newText[20];  gets(text);  strcpy(newText,text);  for(int i=0;i<strlen(text);i++)  if(text[i] = =’A’)  text[i] = text[i]+2;  puts(text); } | 1 |
|  | C | Rewrite the following C++ code after removing any/all Syntactical Error(s) with each correction underlined.  **Note: Assume all required header files are already being included in the program.**  #define float PI 3.14  void main( )  {  float R=4.5,H=1.5;  A=2\*PI\*R\*H + 2\*PI ;  pow(R,2);  cout<<‘Area=’<<A<<endl;  } | 2 |
|  | d | Find and write the output of the following C++ program code:  **Note: Assume all required header files are already being included in the program.**  #include <iostream.h>  int max (int &x, int &y, int &z)  { if (x >y && y > z)  { y ++; z ++; return x; }  else  ` if (y >x) return y; else return z;  }  int main ( ) { int a = 10, b = 13, c = 8 ;  a = max (a, b, c); cout << a << b << c << endl;  b = max (a, b, c);  cout << + a << ++ b << ++ c << endl;  c = max (a, b, c);  cout << a++ << ++b << ++c << endl;  return 0;  } | 3 |
|  | E | Find and write the output of the following C++ program code:  typedef char STRING[80];  void MIXNOW(STRING S)  {  int Size=strlen(S);  for(int I=0;I<Size;I+=2)  {  char WS=S[I]; S[I]=S[I+1]; S[I+1]=WS;  }  for (I=1;I<Size;I+=2)  if (S[I]>=’M’ && S[I]<=’U’)  S[I]=’@’;  }  void main()  {  STRING Word=”CBSEEXAM2019”;  MIXNOW(Word);  cout<<Word<<endl;  } | 2 |
|  | f | Observe the following program and find out, which output(s) out of (i) to  (iv) willbe expected from the program? What will be the minimum and the maximum value assigned to the variable Alter?  Note: Assume all required header files are already being included in the program.  void main( )  {  randomize();  int Ar[]={10,7}, N;  int Alter=random(2) + 10 ; for (int C=0;C<2;C++)  {  N=random(2) ; cout<<Ar[N] +Alter<<”#”;  }  }  (i) 21#20# (ii) 20#18# (iii) 20#17# (iv) 21#17# | 2 |
| Q2 | A | What is a copy constructor? Illustrate with a suitable C++ example. | 2 |
|  | B | Write the output of the following C++ code. Also, write the name of feature of Object Oriented Programming used in the following program jointly illustrated by the Function 1 to Function 4.  void My\_fun ( ) // Function 1  {  for (int I=1 ; I<=50 ; I++) cout<< "-" ; cout<<end1 ;  }  void My\_fun (int N) // Function 2  {  for (int I=1 ; I<=N ; I++) cout<<"\*" ; cout<<end1 ;  }  void My\_fun (int A, int B) // Function 3  {  for (int I=1. ;I<=B ;I++) cout <<A\*I ; cout<<end1 ;  }  void My\_fun (char T, int N) // Function 4  {  for (int I=1 ; I<=N ; I++) cout<<T ; cout<<end1;  }  void main ( )  {  int X=7, Y=4, Z=3;  char C='#' ; My\_fun (C,Y) ;  My\_fun (X,Z) ;  } | 2 |
|  | C | Define a class Ele\_Bill in C++ with the following descriptions:  **Private members:**  Cname of type character array  Pnumber of type long  No\_of\_units of type integer  Amount of type float.  Calc\_Amount( ) This member function should calculate the amount as No\_of\_units\*Cost Amount can be calculated according to the following conditions:  **No\_of\_units Cost**  First 50 units Free  Next 100 units 0.80 @ unit  Next 200 units 1.00 @ unit  Remaining units 1.20 @ unit\  **Public members:**   * A function Accept( ) which allows user to enter Cname, Pnumber, No\_of\_units and invoke function Calc\_Amount().   A function Display( ) to display the values of all the data members on the screen. | 4 |
|  | D | Answer the questions (i) to (iv) based on the following:  class Faculty  {  int FCode; protected:  char FName[20];  public:  Faculty(); void Enter();  void Show();  };  class Programme  {  int PID; protected:  char Title[30];  public:  Programme(); void Commence();  void View();  };  class Schedule: public Programme, Faculty  {  int DD,MM,YYYY;  public:  Schedule(); void Start();  void View();  };  void main()  {  Schedule S; //Statement 1  //Statement 2  }   1. Write the names of all the member functions, which are directly accessible by the object S of class Schedule as declared in main() function. 2. Write the names of all the members, which are directly accessible by the member function Start( ) of class Schedule. 3. Write Statement 2 to call function View( ) of class Programme from the object S of class Schedule. 4. What will be the order of execution of the constructors, when the object S of class Schedule is declared inside main()? | 4 |
| Q3 | A | Write a user defined function in C++ to find the sum of both left and right diagonal elements from a two dimensional array. | 2 |
|  | B | Write a user defined function Reverse(int A[],int n) which accepts an integer array and its size as arguments(parameters) and reverse the array.  Example : if the array is 10,20,30,40,50 then reversed array is 50,40,30,20,10 | 3 |
|  | C | An array S[10] [30] is stored in the memory along the column with each of its element occupying 2 bytes. Find out the memory location of S[5][10], if element S[2][15] is stored at the location 8200. | 3 |
|  | D | Write the definition of a member function Ins\_Player() for a class CQUEUE in C++, to add a Player in a statically allocated linear queue of PLAYERs considering the following code  is already written as a part of the program: struct Player  {  long Pid;  char Pname[20]; };  const int size=10;  class CQUEUE  {  Player Ar[size]; int Front, Rear;  public:  CQUEUE( )  {  Front = -1;  Rear = -1;  }  void Ins\_Player(); // To add player in a static circular queue  void Del\_Player(); // To remove player from a static circular queue void Show\_Player(); // To display static circular queue  }; | 4 |
|  | E | Convert the following Infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion. A/B+C\*(D-E) | 3 |
|  |  |  | 3 |
| Q4 | A | Evaluate the following Postfix expression :  4,10,5,+,\*,15,3,/,- |  |
|  | B | Write a function PUSH( ) in C++ to push an element in any array implemented stack. | 3 |
| Q5 | A | Observe the following table and answer the parts(i) and(ii) accordingly  **Table:Product**   |  |  |  |  | | --- | --- | --- | --- | | **Pno** | **Name** | **Qty** | **PurchaseDate** | | 101 | Pen | 1022 | 12-12-2018 | | 102 | Pencil | 3201 | 21-02-2018 | | 103 | Eraser | 901 | 12-07-2017 | | 104 | Clips | 343 | 23-04-2016 |  1. Write the names of most appropriate columns, which can be considered as candidate keys. 2. What is the degree and cardinality of the above table? | 2 |
|  | B | Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables.  **Table: Trainer**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Tin** | **Tname** | **City** | **Hiredate** | **Salary** | | 101 | Sarthak | Ghaziabad | 20-03-2018 | 45000 | | 102 | Anushka | Delhi | 13-04-2016 | 50000 | | 103 | Chetan srivastava | Banglore | 20-09-2016 | 40000 | | 104 | Nishchal | Mumbai | 26-08-2015 | 35000 |   **Table : Course**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **CID** | **Cname** | **Fees** | **StatDate** | **TIN** | | C201 | MCA | 350000 | 12-02-2016 | 101 | | C202 | AGDCA | 430000 | 30-04-2017 | 104 | | C203 | DCA | 45000 | 12-05-2017 | 102 | | C204 | DTH | 54000 | 20-08-2018 | 103 |  1. Display the Trainer Name, City & Salary in descending order of their Hiredate. 2. To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001. 3. To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000. 4. To display number of Trainers from each city. 5. SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN(‘DELHI’, ‘MUMBAI’); 6. SELECT DISTINCT TID FROM COURSE; 7. SELECT TID, COUNT(\*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(\*)>1; 8. SELECT COUNT(\*), SUM(FEES) FROM COURSE WHERE STARTDATE< ‘2018-09-15’; | 4+2 |
| Q6 | A | State any one Distributive Law of Boolean Algebra and Verify it using truth table | 2 |
|  | B | Draw the Logic Circuit of the following Boolean Expression: ((U + V’).(U + W)). (V + W’) | 2 |
|  | C | Derive a Canonical SOP expression for a Boolean function F(X,Y,Z) represented by the following truth table:   |  |  |  |  | | --- | --- | --- | --- | | X | Y | Z | F(x,y,z) | | 0 | 0 | 0 | 1 | | 0 | 0 | 1 | 1 | | 0 | 1 | 0 | 0 | | 0 | 1 | 1 | 0 | | 1 | 0 | 0 | 1 | | 1 | 0 | 1 | 0 | | 1 | 1 | 0 | 0 | | 1 | 1 | 1 | 1 | | 1 |
|  | D | Reduce the following Boolean Expression to its simplest form using K-map  **F(X,Y,Z,W)=** Σ **(0,1,2,3,4,5,8,10,11,14)** | 3 |
| Q7 | A | Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future? | 2 |
|  | b | Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network? | 1 |
|  | c | Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media. | 1 |
|  | d | Write the expanded names for the following abbreviated terms used in Networking and Communications:  (i) CDMA (ii) HTTP (iii) XML (iv) URL | 2 |
|  | E | DAV Public School,Ghaziabad is Setting up the network between its Different Wings of school campus. There are wings SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H).  The distance between these wings are as follows   |  |  | | --- | --- | | Admin to senior | 100m | | Admin to junior | 200m | | Admin to hostel | 400m | | Senior to junior | 300m | | Senior to hostel | 80m | | Junior to hostel | 120m |   Number of computers in each wing   |  |  | | --- | --- | | Admin | 20 | | Senior | 150 | | Junior | 50 | | Hostel | 40 |  1. Suggest the best wired medium and draw the cable layout to efficiently connect various wings of DAV PublicSchool. 2. Name the most suitable wing where the server must be installed. Justify your answer. 3. Suggest a device/software and its placement that would provide data security for the entire network of the School. 4. Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of DAV Public School. |  |