

COMPUTER SCIENCE (Theory) - Class XII

Marking Scheme

Sample Question Paper–II

Subject Code - 083

TIME : 3 Hrs

MM : 100

| No. | Answers | | Marks | |
|-----|--|---|-------|--|
| 1. | | | 2 | |
| | (a) | | | |
| | Actual Parameter | Formal Parameter | | |
| | It is a parameter, which is used in function call to send the value from calling environment | It is a parameter, which is used in function header, to receive the value from actual parameter | | |
| | <pre>#include <iostream.h> void Calc(int T) //T is formal parameter { cout<<5*T; } void main() { int A=45; Calc(A);//A is actual parameter }</pre> | | | |
| | <p>(1 Mark for two differences)</p> <p>(1 Mark for the suitable example)</p> <p style="text-align: center;">OR</p> <p>(Full 2 Mark for explanation of differences with the help of an example)</p> | | | |
| (b) | (i) math.h | (ii) ctype.h | 1 | |
| | (½ Mark for mentioning each correct header filename) | | | |

| No. | Answers | Marks |
|-----|---|-------|
| (c) | <pre> #include <iostream.h> struct Pixels { int Color,Style;}; void ShowPoint(Pixels P) { cout<<P.Color<<P.Style<<endl;} void main() { Pixels Point1={5,3}; ShowPoint(Point1); Pixels Point2=Point1; Point1.Color+=2; ShowPoint(Point2); } </pre> <p>(½ Mark for each correction)</p> | 2 |
| (d) | <pre> 7#9#5# 30#50#70#40# 2100#1200# </pre> <p>(1 Mark for each line of output)</p> | 3 |
| (e) | <pre> TiLeP550 AiLJP430 </pre> <p>(1 Mark for each line of output)</p> | 2 |
| (f) | <p>Maximum Value: 19 Minimum Value: 10</p> <p>(2 Marks for correct values)</p> | 2 |

| No. | Answers | Marks |
|-----|---|--|
| 2. | <p data-bbox="132 367 1382 524">(a) Polymorphism: It is a method of using the same operator or function (method) to work using different set of inputs. Function overloading is one of the examples of polymorphism, where more than one function carrying same name behave differently with different set of parameters passed to them.</p> <pre data-bbox="312 546 616 994"> void Display() { cout<<"Hello!"<<endl; } void Display(int N) { cout<<2*N+5<<endl; } </pre> <p data-bbox="220 1016 767 1055"><i>(1 Mark each for appropriate definition)</i></p> <p data-bbox="220 1077 687 1115"><i>(1 Mark for appropriate example)</i></p> <p data-bbox="132 1196 1251 1352">(b) i) Copy constructor, It will help to copy the data from one object to another. <i>(½ Mark for mentioning copy constructor)</i> <i>(½ Mark for remaining answer)</i></p> <p data-bbox="220 1375 767 1532">ii) Match M; //Function 1 Match N(10); //Function 3 <i>(½ Mark for each statement)</i></p> <p data-bbox="132 1610 600 1991">(c) class FLIGHT { int Fno; char Destination[20]; float Distance, Fuel; void CALFUEL(); public:</p> | <p data-bbox="1414 367 1430 400">2</p> <p data-bbox="1414 1196 1430 1229">2</p> <p data-bbox="1414 1610 1430 1644">4</p> |

| No. | Answers | Marks |
|-----|--|-------|
| | <pre> void FEEDINFO(); void SHOWINFO(); }; void FLIGHT::CALFUEL() { if (Distance<=1000) Fuel=500; else if (Distance<=2000) Fuel=1100; else Fuel=2200; } void FLIGHT::FEEDINFO() { cout<<"Flight No :";cin>>Fno; cout<<"Destination :";gets(Destination); cout<<"Distance :";cin>>Distance; CALFUEL(); } void FLIGHT::SHOWINFO() { cout<<"Flight No :"<<Fno<<endl; cout<<"Destination :"<<Destination<<endl; cout<<"Distance :"<<Distance<<endl;; cout<<"Fuel :"<<Fuel<<endl;; } </pre> <p><i>(½ Mark for correct syntax for class header)</i></p> <p><i>(½ Mark for correct declarations of data members)</i></p> | |

| No. | Answers | Marks |
|------------|---|-------|
| (d) | <p><i>(1 Mark for appropriate definition of function CALFUEL())</i></p> <p><i>(1 Mark for appropriate definition of FEEDINFO() with a call for CALFUEL())</i></p> <p><i>(1 Mark for appropriate definition of SHOWINFO())</i></p> <p>(i) None of data members are accessible from objects belonging to class AUTHOR. <i>(1 Mark for correct answer)</i></p> <p>(ii) Enter(), Show() <i>(1 Mark for correct answer)</i></p> <p>(iii) Data members: Voucher_No, Sales_Date, Salary Member function: Sales_Entry(), Sales_Detail(), Enter(), Show(), Register(), Status() <i>(1 Mark for correct answer)</i></p> <p>(iv) 66 <i>(1 Mark for correct answer)</i></p> | 4 |
| | <p>3. (a) void AddNSave(int A[],int B[],int C[],int N)</p> <pre> { for (int i=0;i<N;i++) C[i]=A[i]+B[i]; } </pre> <p><i>(1 Mark for correct Function Header with appropriate parameters)</i></p> <p><i>(1 Mark for appropriate loop)</i></p> <p><i>(1 Mark for correct expression for addition of corresponding elements)</i></p> <p>(b) Given, W=4 N=20 M=30 Loc(P[2][20])=5000</p> | 3 |

| No. | Answers | Marks |
|-----|---|-------|
| | <p>Column Major Formula:</p> <p>Loc(P[I][J]) $= \text{Base}(P) + W * (N * J + I)$</p> <p>Loc(P[2][20]) $= \text{Base}(P) + 4 * (20 * 20 + 2)$</p> <p>Base(P) $= 5000 - 4 * (400 + 2)$</p> <p>$= 5000 - 1608$</p> <p>$= 3392$</p> <p><i>(1 Mark for writing correct formula (for column major) OR substituting formula with correct values)</i></p> <p><i>(1 Mark for writing calculation step - at least one step)</i></p> <p><i>(1 Mark for correct address)</i></p> <p>(c) struct NODE</p> <p> {</p> <p> float Data; NODE *Link;</p> <p> };</p> <p> class STACK</p> <p> {</p> <p> NODE *Top;</p> <p> public:</p> <p> STACK();</p> <p> void Push();</p> <p> void Pop();</p> <p> void Display();</p> <p> ~STACK();</p> <p> };</p> <p> void STACK::Push()</p> <p> {</p> <p> NODE *Temp;</p> <p> Temp = new NODE;</p> | 3 |

| No. | Answers | Marks |
|-----|--|-------|
| | <pre> cin>>Temp->Data; Temp->Link=Top; Top=Temp; } </pre> <p>(1 Mark for declaring Temp pointer) (1 Mark for creating a new node and assigning/entering appropriate values in it) (1 Mark for connecting link part of new node to top) (1 Mark for assigning Top as the new node i.e. Temp)</p> | |
| (d) | <pre> void MatAdd(int M[][4],int N,int M) { for (int R=0;R<N;R++) { int SumR=0; for (int C=0;C<M;C++) SumR+=M[C][R]; cout<<SumR<<endl; } } </pre> <p>(½ Mark for correct function header) (½ Mark for appropriate outer loop) (½ Mark for appropriate inner loop) (½ Mark for correctly initializing SumR and calculatin the sum)</p> | 2 |
| (e) | <p>(½ Mark for correctly evaluating each operator) OR</p> | 2 |

| No. | Answers | Marks |
|-----|--|-------|
| | <p>(1 Mark for correct answer)</p> <div><div>Step 1: Push</div><div><div></div><div></div><div></div><div>True</div></div></div> <div><div>Step 2: Push</div><div><div></div><div></div><div>False</div><div>True</div></div></div> <div><div>Step 3: AND</div><div>Push</div><div><div></div><div></div><div></div><div>True</div></div><div>Pop</div><div>Op2=False</div><div><div></div><div></div><div></div><div></div></div><div>Pop</div><div>Op1=True</div><div>Op2=False</div><div><div></div><div></div><div></div><div>False</div></div></div> <div><div>Step 4: Push</div><div><div></div><div></div><div>True</div><div>False</div></div></div> <div><div>Step 5: Push</div><div><div></div><div>True</div><div>True</div><div>False</div></div></div> <div><div>Step 6: NOT</div><div></div><div>Push</div><div><div></div><div></div><div>True</div><div>False</div></div><div>Pop</div><div>Op2=True</div><div><div></div><div>False</div><div>True</div><div>False</div></div></div> <div><div>Step 7: OR</div><div>Push</div><div><div></div><div></div><div>True</div><div>False</div></div><div>Pop</div><div>Op2=False</div><div><div></div><div></div><div></div><div>False</div></div><div>Pop</div><div>Op1=True</div><div>Op2=False</div><div><div></div><div></div><div>True</div><div>False</div></div></div> <div><div>Step 8: AND</div><div>Push</div><div><div></div><div></div><div></div><div>False</div></div><div>Pop</div><div>Op2=True</div><div><div></div><div></div><div></div><div></div></div><div>Pop</div><div>Op1=False</div><div>Op2=True</div><div><div></div><div></div><div></div><div>False</div></div></div> <div><div>Step 9: Pop</div><div><div></div><div></div><div></div><div></div></div><div>Result</div><div>False</div></div> | |

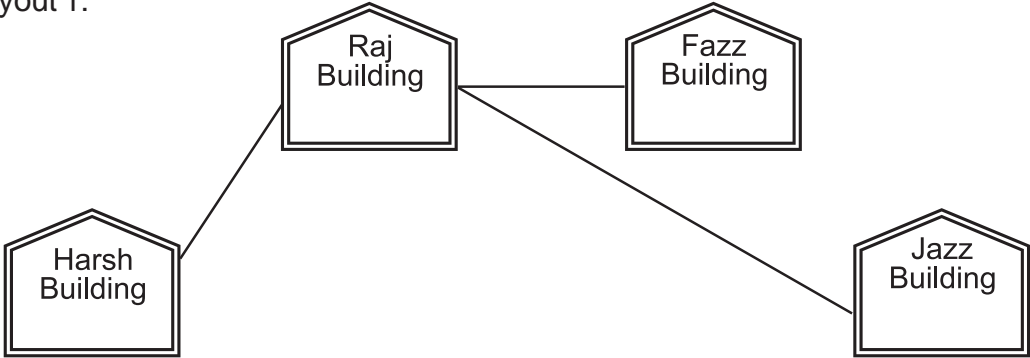
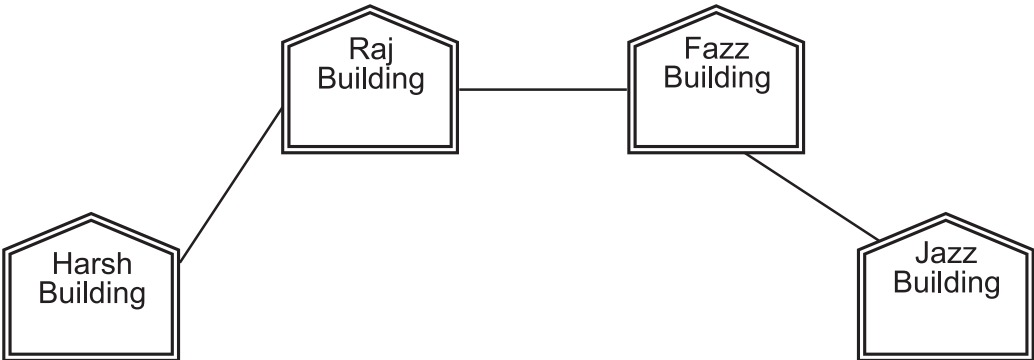
| No. | Answers | Marks |
|-----|--|-------|
| 4. | <p>(a) File.seekg(0,ios::end); //Statement 1 File.tellg(); //Statement 2 (½ Mark for each correct Statement)</p> | 1 |
| | <p>(b) void CountAlphabet() { ifstream FIL("NOTES.TXT"); int CALPHA=0; char CH=FIL.get(); while (!FIL.eof()) { if (isalpha(CH)) CALPHA++; CH=FIL.get(); } cout<<"No. of Alphabets:"<<CALPHA<<endl; }</p> <p>(½ Mark for opening NOTES.TXT correctly) (½ Mark for initializing a counter variable as 0) (½ Mark for correctly reading a character from the file) (½ Mark for correctly incrementing the counter)</p> | 2 |
| | <p>(c) void Addnew() { fstream FIL; FIL.open("STUDENT.DAT",ios::binary ios::app); STUD S; char CH; do {</p> | 3 |

| No. | Answers | Marks |
|-----|--|-------|
| | <pre> S.Enter(); FIL.write((char*)&S,sizeof(S)); cout<<"More(Y/N)?"<<cin>>CH; } while(CH!='Y'); FIL.close(); } </pre> <p>(½ Mark for opening STUDENT.DAT correctly)</p> <p>(½ Mark for user input for the new object)</p> <p>(1 Mark for appropriate loop)</p> <p>(1 Mark for writing the record on to the binary file)</p> | |
| 5. | | |
| (a) | <p>An attribute or set attributes which are used to identify a tuple uniquely is known as Primary Key. If a table has more than one such attributes which identify a tuple uniquely than all such attributes are known as Candidate Keys.</p> <p>(1 Mark for each definition)</p> | 2 |
| (b) | <p>Write SQL commands for the flowing statements:</p> <p>(i) SELECT GameName,Gcode FROM GAMES;</p> <p> (1 Mark for correct query)</p> <p style="text-align: center;">OR</p> <p> (½ Mark for partially correct answer)</p> <p>(ii) SELECT * FROM Games WHERE Prizemoney>7000;</p> <p> (1 Mark for correct query)</p> <p style="text-align: center;">OR</p> <p> (½ Mark for partially correct answer)</p> <p>(iii) SELECT * FROM Games ORDER BY ScheduleDate;</p> <p> (1 Mark for correct query)</p> | 4 |

| No. | Answers | Marks |
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| | <p style="text-align: center;">OR</p> <p style="text-align: center;"><i>(½ Mark for partially correct answer)</i></p> <p>(iv) SELECT SUM(Prizemoney),Type FROM Games GROUP BY Type; <i>(1 Mark for correct query)</i></p> <p style="text-align: center;">OR</p> <p style="text-align: center;"><i>(½ Mark for partially correct answer)</i></p> | |
| (c) | <p>(i) 2 <i>(½ Mark for correct output)</i></p> <p>(ii) 19-Mar-2004 12-Dec-2003 <i>(½ Mark for correct output)</i></p> <p>(iii) Ravi Sahai Lawn Tennis <i>(½ Mark for correct output)</i></p> <p>(iv) 3 <i>(½ Mark for correct output)</i></p> | 2 |
| 6. | <p>(a) $X+X.Y = X$</p> <p>L.H.S $= X+X.Y$</p> <p>$= X.1+X.Y$</p> <p>$= X.(1+Y)$</p> <p>$= X.1$</p> <p>$= X$</p> <p>$= R.H.S$</p> <p>$X+X'.Y = X+Y$</p> <p>L.H.S. $= X+X'.Y$</p> | 2 |

| No. | Answers | Marks | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|--|-------|------|-----|----|-----|------|---|---|-----|---|-----|---|---|----|---|----|----|----|----|----|-----|---|---|-----|----|---|
| | <div><div><div>=</div><div>(X+X').(X+Y)</div></div><div><div>=</div><div>1.(X+Y)</div></div><div><div>=</div><div>X+Y</div></div><div><div>=</div><div>R.H.S</div></div></div> <div>(1 Mark for stating any one of the Absorption Law)</div> <div>(1 Mark for verifying the law)</div> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (b) | <div>F(U,V)=U'.V+U.V'</div> <div>(2 Marks for the final expression)</div> <div>OR</div> <div>(1 Mark for any one of the correct terms out of U'.V or U.V')</div> | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| (c) | <div>F(P,Q,R) = P'.Q'R'+P'.Q'R+P'.Q.R+P.Q'.R</div> <div>(1 Mark for the correct expression)</div> | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| (d) | <table><tr><td></td><td>U'V'</td><td>U'V</td><td>UV</td><td>UV'</td></tr><tr><td>W'Z'</td><td>0</td><td>4</td><td>112</td><td>8</td></tr><tr><td>W'Z</td><td>1</td><td>8</td><td>13</td><td>9</td></tr><tr><td>WZ</td><td>13</td><td>17</td><td>15</td><td>11</td></tr><tr><td>WZ'</td><td>2</td><td>6</td><td>114</td><td>10</td></tr></table> <div>F(U,V,W,Z)=UV+WZ+UZ</div> <div>(½ Mark for placing all 1s at correct positions in K-Map)</div> <div>(½ Mark for each grouping)</div> <div>(1 Mark for writing final expression in reduced/minimal form)</div> <div>Note: Deduct ½ mark if wrong variable names are used</div> | | U'V' | U'V | UV | UV' | W'Z' | 0 | 4 | 112 | 8 | W'Z | 1 | 8 | 13 | 9 | WZ | 13 | 17 | 15 | 11 | WZ' | 2 | 6 | 114 | 10 | 3 |
| | U'V' | U'V | UV | UV' | | | | | | | | | | | | | | | | | | | | | | | |
| W'Z' | 0 | 4 | 112 | 8 | | | | | | | | | | | | | | | | | | | | | | | |
| W'Z | 1 | 8 | 13 | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| WZ | 13 | 17 | 15 | 11 | | | | | | | | | | | | | | | | | | | | | | | |
| WZ' | 2 | 6 | 114 | 10 | | | | | | | | | | | | | | | | | | | | | | | |

| No. | Answers | Marks |
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| <p>7.</p> <p>a)</p> | <p>Bandwidth is referred to the volume of information per unit of time that a transmission medium (like an Internet connection) can handle.</p> <p style="text-align: center;">OR</p> <p>The amount of data that can be transmitted in a fixed amount of time is known as bandwidth.</p> <p>For digital devices, the bandwidth is usually expressed in bits per second(bps) or bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz).</p> <p><i>(½ Mark for writing appropriate definition)</i></p> <p><i>(½ Mark for giving the unit of bandwidth)</i></p> | <p>1</p> |
| <p>b)</p> | <p>The first benefit of XML is that because you are writing your own markup language, you are not restricted to a limited set of tags defined by proprietary vendors.</p> <p>Rather than waiting for standards bodies to adopt tag set enhancements (a process which can take quite some time), or for browser companies to adopt each other's standards (yeah right!), with XML, you can create your own set of tags at your own pace.</p> <p><i>(1 Mark for writing appropriate explanation)</i></p> | <p>1</p> |
| <p>c)</p> | <p>A firewall is a part of a computer system or network that is designed to block unauthorized access while permitting authorized communications. It is a device or set of devices configured to permit, deny, encrypt, decrypt, or proxy all (in and out) computer traffic between different security domains based upon a set of rules and other criteria.</p> <p><i>(1 Mark for writing appropriate explanation)</i></p> | <p>1</p> |
| <p>d)</p> | <p>A Uniform Resource Locator (URL) is used to specify, where an identified resource is available in the network and the mechanism for retrieving it. A URL is also referred to as a Web address.</p> <p><i>(1 Mark for writing appropriate explanation)</i></p> | <p>1</p> |

| No. | Answers | Marks |
|-----|---|-------|
| e) | <p data-bbox="217 327 1158 365">Suggest a cable layout of connections between the buildings.</p> <p data-bbox="217 387 344 421">Layout 1:</p>  <pre> graph LR Harsh[Harsh Building] --- Raj[Raj Building] Raj --- Fazz[Fazz Building] Raj --- Jazz[Jazz Building] Fazz --- Jazz </pre> <p data-bbox="217 817 1378 855">Layout 2: Since the distance between Fazz Building and Jazz Building is quite short</p>  <pre> graph LR Harsh[Harsh Building] --- Raj[Raj Building] Raj --- Fazz[Fazz Building] Fazz --- Jazz[Jazz Building] </pre> <p data-bbox="217 1299 911 1337"><i>(1 Mark for any one of the two suggested layouts)</i></p> <p data-bbox="132 1368 1378 1523">e2) The most suitable place / block to house the server of this organisation would be Raj Building, as this block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.</p> <p data-bbox="217 1547 890 1585"><i>(1 Mark for correct answer with suitable reason)</i></p> <p data-bbox="132 1608 1378 1740">e3) (i) Raj Building (ii) In both the layouts, a hub/switch each would be needed in all the buildings, to interconnect the group of cables from the different computers in each block</p> <p data-bbox="217 1765 687 1803"><i>(½ Mark for each correct answer)</i></p> <p data-bbox="132 1814 1378 1928">e4) The type of network that shall be formed to link the sale counters situated in various parts of the same city would be a MAN, because MAN (Metropolitan Area Networks) are the networks that link computer facilities within a city.</p> <p data-bbox="217 1951 943 1989"><i>(1 Mark for correct answer with suitable justification)</i></p> | 4 |

| No. | Answers | Marks |
|-----|---|-------|
| f) | <p>Freeware, the name derived from words "free" and "software". It is a computer software that is available for use at no cost or for an optional fee. Freeware is generally proprietary software available at zero price, and is not free software. The author usually restricts one or more rights to copy, distribute, and make derivative works of the software.</p> <p>Shareware is usually offered as a trial version with certain features only available after the license is purchased, or as a full version, but for a trial period. Once the trial period has passed the program may stop running until a license is purchased. Shareware is often offered without support, updates, or help menus, which only become available with the purchase of a license. The words "free trial" or "trial version" are indicative of shareware.</p> <p><i>(1 Mark for appropriate difference)</i></p> | 1 |
| g) | <p>A Trojan horse is a term used to describe malware that appears, to the user, to perform a desirable function but, in fact, facilitates unauthorized access to the user's computer system</p> <p>A computer worm is a self-replicating computer program. It uses a network to send copies of itself to other nodes (computers on the network) and it may do so without any user intervention.</p> <p><i>(1 Mark for appropriate difference)</i></p> | 1 |