

COMPUTER SCIENCE (Theory) - Class XII

Sample Question Paper-I

Subject Code - 083

TIME : 3 Hrs

MM : 70

No.	Questions	Marks
1.		
(a)	What is the difference between Global Variable and Local Variable? Also, give a suitable C++ code to illustrate both.	2
(b)	Which C++ header file(s) will be essentially required to be included to run / execute the following C++ code: <pre>void main() { char Msg[]="Sunset Gardens"; for (int l=5;l<strlen(Msg);l++) puts(Msg); }</pre>	1
(c)	Rewrite the following program after removing the syntactical errors (if any). Underline each correction. <pre>#include [iostream.h] class MEMBER { int Mno;float Fees; PUBLIC: void Register(){cin>>Mno>>Fees;} void Display{cout<<Mno<<" : "<<Fees<<endl;} }; void main() { MEMBER M; Register(); M.Display(); }</pre>	2

No.	Questions	Marks
(d)	<p>Find the output of the following program:</p> <pre> #include <iostream.h> struct GAME { int Score, Bonus;}; void Play(GAME &g, int N=10) { g.Score++;g.Bonus+=N; } void main() { GAME G={110,50}; Play(G,10); cout<<G.Score<<":"<<G.Bonus<<endl; Play(G); cout<<G.Score<<":"<<G.Bonus<<endl; Play(G,15); cout<<G.Score<<":"<<G.Bonus<<endl; } </pre>	3
(e)	<p>Find the output of the following program:</p> <pre> #include <iostream.h> void Secret(char Str[]) { for (int L=0;Str[L]!='\0';L++); for (int C=0;C<L/2;C++) if (Str[C]=='A' Str[C]=='E') Str[C]='#'; else { char Temp=Str[C]; </pre>	2

No.	Questions	Marks
	<pre> Str[C]=Str[L-C-1]; Str[L-C-1]=Temp; } } void main() { char Message[]="ArabSagar"; Secret(Message); cout<<Message<<endl; } </pre>	
(f)	<p>In the following program, if the value of Guess entered by the user is 65, what will be the expected output(s) from the following options (i), (ii), (iii) and (iv)?</p> <pre> #include <iostream.h> #include <stdlib.h> void main() { int Guess; randomize(); cin>>Guess; for (int l=1;l<=4;l++) { New=Guess+random(l); cout<<(char)New; } } </pre> <p>(i) ABBC (ii) ACBA (iii) BCDA (iv) CABD</p>	2

No.	Questions	Marks
2.		
(a)	What do you understand by Data Encapsulation and Data Hiding? Also, give a suitable C++ code to illustrate both.	2
(b)	Answer the questions (i) and (ii) after going through the following class:	2
	<pre> class Seminar { int Time; public: Seminar() //Function 1 { Time=30;cout<<"Seminar starts now"<<end1; } void Lecture() //Function 2 { cout<<"Lectures in the seminar on"<<end1; } Seminar(int Duration) //Function 3 { Time=Duration;cout<<"Seminar starts now"<<end1; } ~Seminar() //Function 4 { cout<<"Vote of thanks"<<end1; } }; </pre>	
i)	In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/called?	
ii)	In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together? Write an example illustrating the calls for these functions.	

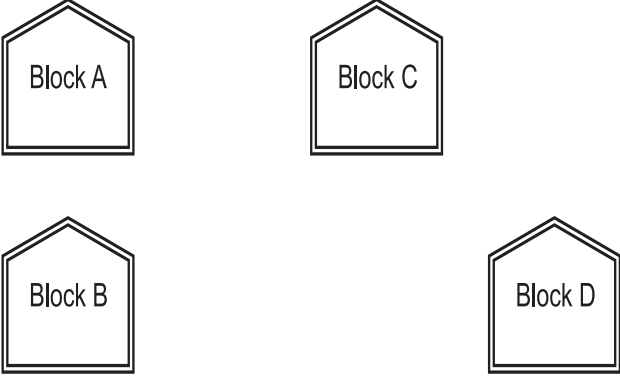
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(c)	<p>Define a class TEST in C++ with following description:</p> <p>Private Members</p> <ul style="list-style-type: none"> • TestCode of type integer • Description of type string • NoCandidate of type integer • CenterReqd (number of centers required) of type integer • A member function CALCNTR() to calculate and return the number of centers as (NoCandidates/100+1) <p>Public Members</p> <ul style="list-style-type: none"> • A function SCHEDULE() to allow user to enter values for TestCode, Description, NoCandidate & call function CALCNTR() to calculate the number of Centres • A function DISPTTEST() to allow user to view the content of all the data members 	4
(d)	<p>Answer the questions (i) to (iv) based on the following:</p> <pre> class PUBLISHER { char Pub[12]; double Turnover; protected: void Register(); public: PUBLISHER(); void Enter(); void Display(); }; class BRANCH { char CITY[20]; protected: float Employees; </pre>	4

No.	Questions	Marks
3.	<pre> 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(); }; </pre> <p>(i) Write the names of data members, which are accessible from objects belonging to class AUTHOR.</p> <p>(ii) Write the names of all the member functions which are accessible from objects belonging to class BRANCH.</p> <p>(iii) Write the names of all the members which are accessible from member functions of class AUTHOR.</p> <p>(iv) How many bytes will be required by an object belonging to class AUTHOR?</p> <p>(a) Write a function in C++ to merge the contents of two sorted arrays A & B into third array C. Assuming array A and B are sorted in ascending order and the resultant array C is also required to be in ascending order.</p> <p>(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[20][10], if the Base Address of the array is 5000.</p> <p>(c) Write a function in C++ to perform Insert operation in a dynamically allocated Queue containing names of students.</p> <p>(d) Write a function in C++ to find the sum of both left and right diagonal ele-</p>	<p>3</p> <p>3</p> <p>4</p> <p>2</p>

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4.	<p>ments from a two dimensional array (matrix).</p> <p>(e) Evaluate the following postfix notation of expression: 20, 30, +, 50, 40, -, *</p>	2
(a)	<p>Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekp() and seekg() functions for performing the required task.</p> <pre> #include <fstream.h> class Item { int Ino;char Item[20]; public: //Function to search and display the content from a particular record number void Search(int); //Function to modify the content of a particular record number void Modify(int); }; void Item::Search(int RecNo) { fstream File; File.open("STOCK.DAT",ios::binary ios::in); _____ //Statement 1 File.read((char*)this,sizeof(Item)); cout<<Ino<<"==>"<<Item<<endl; File.close(); } void Item::Modify(int RecNo) { fstream File; File.open("STOCK.DAT",ios::binary ios::in ios::out); </pre>	1

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	<pre>cout>>Ino;cin.getline(Item,20); _____ //Statement 2 File.write((char*)this,sizeof(Item)); File.close(); }</pre>																																					
5.																																						
(b)	<p>Write a function in C++ to count the number of lines present in a text file "STORY.TXT".</p>	2																																				
(c)	<p>Write a function in C++ to search for a BookNo from a binary file "BOOK.DAT", assuming the binary file is containing the objects of the following class.</p> <pre>class { int Bno; char Title[20]; public: int RBno(){return Bno;} void Enter(){cin>>Bno;gets(Title);} void Display(){cout<<Bno<<Title<<endl;} };</pre>	3																																				
(a)	<p>What do you understand by Degree and Cardinality of a table?</p> <p>Consider the following tables ACTIVITY and COACH and answer (b) and (c) parts of this question:</p> <p>Table: ACTIVITY</p> <table border="1" data-bbox="209 1556 1390 1960"> <thead> <tr> <th>A Code</th> <th>ActivityName</th> <th>Stadium</th> <th>Participants Num</th> <th>Prize Money</th> <th>Schedule Date</th> </tr> </thead> <tbody> <tr> <td>1001</td> <td>Relay 100x4</td> <td>Star Annex</td> <td>16</td> <td>10000</td> <td>23-Jan-2004</td> </tr> <tr> <td>1002</td> <td>High jump</td> <td>Star Annex</td> <td>10</td> <td>12000</td> <td>12-Dec-2003</td> </tr> <tr> <td>1003</td> <td>Shot Put</td> <td>Super Power</td> <td>12</td> <td>8000</td> <td>14-Feb-2004</td> </tr> <tr> <td>1005</td> <td>Long Jump</td> <td>Star Annex</td> <td>12</td> <td>9000</td> <td>01-Jan-2004</td> </tr> <tr> <td>1008</td> <td>Discuss Throw</td> <td>Super Power</td> <td>10</td> <td>15000</td> <td>19-Mar-2004</td> </tr> </tbody> </table>	A Code	ActivityName	Stadium	Participants Num	Prize Money	Schedule Date	1001	Relay 100x4	Star Annex	16	10000	23-Jan-2004	1002	High jump	Star Annex	10	12000	12-Dec-2003	1003	Shot Put	Super Power	12	8000	14-Feb-2004	1005	Long Jump	Star Annex	12	9000	01-Jan-2004	1008	Discuss Throw	Super Power	10	15000	19-Mar-2004	2
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	<p>Table: COACH</p> <table border="1" data-bbox="304 344 1187 636"> <thead> <tr> <th>PCode</th> <th>Name</th> <th>Acode</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Ahmad Hussain</td> <td>1001</td> <td></td> </tr> <tr> <td>2</td> <td>Ravinder</td> <td>1008</td> <td></td> </tr> <tr> <td>3</td> <td>Janila</td> <td>1001</td> <td></td> </tr> <tr> <td>4</td> <td>Naaz</td> <td>1003</td> <td></td> </tr> </tbody> </table> <p>(b) Write SQL commands for the flowing statements:</p> <p>(i) To display the names of all activities with their Acodes in descending order.</p> <p>(ii) To display sum of PrizeMoney for the Activities played in each of the Stadium separately.</p> <p>(iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH</p> <p>(iv) To display the content of the Activity table whose ScheduleDate earlier than 01/01/2004 in ascending order of ParticipantsNum.</p> <p>(c) Give the output of the following SQL queries:</p> <p>(i) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;</p> <p>(ii) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM ACTIVITY;</p> <p>(iii) SELECT Name,ActivityName FROM ACTIVITY A,COACH C WHERE A.Acode=C.Acode AND A.ParticipantsNum=10;</p> <p>(iv) SELECT DISTINCT Acode FROM COACH;</p> <p>6.</p> <p>(a) State and verify Demorgan's Laws algebraically.</p> <p>(b) Write the equivalent Boolean Expression for the following Logic Circuit</p> <div data-bbox="395 1630 1209 1935" data-label="Diagram"> <pre> graph LR P((P)) --- NOT1[NOT] Q((Q)) --- NOT2[NOT] NOT1 --- OR1[OR] Q --- OR1 Q --- OR2[OR] NOT2 --- OR2 OR1 --- AND[AND] OR2 --- AND </pre> </div>	PCode	Name	Acode		1	Ahmad Hussain	1001		2	Ravinder	1008		3	Janila	1001		4	Naaz	1003		<p>4</p> <p>2</p> <p>2</p> <p>2</p>
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(c)	Write the POS form of a Boolean function F, which is represented in a truth table as follows:	1																																				
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th data-bbox="209 383 469 439">U</th> <th data-bbox="474 383 815 439">V</th> <th data-bbox="820 383 1114 439">W</th> <th data-bbox="1118 383 1385 439">F</th> </tr> </thead> <tbody> <tr> <td data-bbox="209 445 469 501">0</td> <td data-bbox="474 445 815 501">0</td> <td data-bbox="820 445 1114 501">0</td> <td data-bbox="1118 445 1385 501">1</td> </tr> <tr> <td data-bbox="209 508 469 564">0</td> <td data-bbox="474 508 815 564">0</td> <td data-bbox="820 508 1114 564">1</td> <td data-bbox="1118 508 1385 564">0</td> </tr> <tr> <td data-bbox="209 571 469 627">0</td> <td data-bbox="474 571 815 627">1</td> <td data-bbox="820 571 1114 627">0</td> <td data-bbox="1118 571 1385 627">1</td> </tr> <tr> <td data-bbox="209 633 469 689">0</td> <td data-bbox="474 633 815 689">1</td> <td data-bbox="820 633 1114 689">1</td> <td data-bbox="1118 633 1385 689">0</td> </tr> <tr> <td data-bbox="209 696 469 752">1</td> <td data-bbox="474 696 815 752">0</td> <td data-bbox="820 696 1114 752">0</td> <td data-bbox="1118 696 1385 752">1</td> </tr> <tr> <td data-bbox="209 759 469 815">1</td> <td data-bbox="474 759 815 815">0</td> <td data-bbox="820 759 1114 815">1</td> <td data-bbox="1118 759 1385 815">0</td> </tr> <tr> <td data-bbox="209 822 469 878">1</td> <td data-bbox="474 822 815 878">1</td> <td data-bbox="820 822 1114 878">0</td> <td data-bbox="1118 822 1385 878">1</td> </tr> <tr> <td data-bbox="209 884 469 913">1</td> <td data-bbox="474 884 815 913">1</td> <td data-bbox="820 884 1114 913">1</td> <td data-bbox="1118 884 1385 913">1</td> </tr> </tbody> </table>		U	V	W	F	0	0	0	1	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
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(d)	Reduce the following Boolean Expression using K-Map:	3																																				
7.	F(A,B,C,D)= (0,1,2,4,5,6,8,10)																																					
a)	Compare any two Switching techniques.	1																																				
b)	Which of the following is not a Client Side script:	1																																				
(i)	VB Script																																					
(ii)	Java Script																																					
(iii)	ASP																																					
(iv)	PHP																																					
c)	If someone has hacked your Website, to whom you lodge the Complain?	1																																				
d)	What do you mean by IP Address? How is it useful in Computer Security?	1																																				
e)	Knowledge Supplement Organisation has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below:	4																																				
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> </div>																																					

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	<p>Center to center distances between various blocks</p> <table border="1" data-bbox="360 349 1254 701"> <tr> <td>Block A to Block B</td> <td>50 m</td> </tr> <tr> <td>Block B to Block C</td> <td>150 m</td> </tr> <tr> <td>Block C to Block D</td> <td>25 m</td> </tr> <tr> <td>Block A to Block D</td> <td>170 m</td> </tr> <tr> <td>Block B to Block D</td> <td>125 m</td> </tr> <tr> <td>Block A to Block C</td> <td>90 m</td> </tr> </table> <p>Number of Computers</p> <table border="1" data-bbox="368 763 1051 992"> <tr> <td>Block A</td> <td>25</td> </tr> <tr> <td>Block B</td> <td>50</td> </tr> <tr> <td>Block C</td> <td>125</td> </tr> <tr> <td>Block D</td> <td>10</td> </tr> </table> <p>e1) Suggest a cable layout of connections between the blocks.</p> <p>e2) Suggest the most suitable place (i.e. block) to house the server of this organisation with a suitable reason.</p> <p>e3) Suggest the placement of the following devices with justification</p> <p>(i) Repeater</p> <p>(ii) Hub/Switch</p> <p>e4) The organization is planning to link its 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?</p> <p>f) What do you mean by Spam Mails? How can you protect your mailbox from Spams?</p> <p>g) Mention any two advantages of Open Source Software over Proprietary Software.</p>	Block A to Block B	50 m	Block B to Block C	150 m	Block C to Block D	25 m	Block A to Block D	170 m	Block B to Block D	125 m	Block A to Block C	90 m	Block A	25	Block B	50	Block C	125	Block D	10	<p>1</p> <p>1</p>
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