

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
(f)	<pre> Str[C]=Str[L-C-1]; Str[L-C-1]=Temp; } } void main() { char Message[]="ArabSagar"; Secret(Message); cout<<Message<<endl; } </pre>	
	<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: <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>	2
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.	

No.	Questions	Marks
(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 DISPTST() 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
	<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>	
3.	<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>	3
	<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>	3
	<p>(c) Write a function in C++ to perform Insert operation in a dynamically allocated Queue containing names of students.</p>	4
	<p>(d) Write a function in C++ to find the sum of both left and right diagonal ele-</p>	2

No.	Questions	Marks
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
	<p>(a) 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

No.	Questions	Marks																																				
5.	<pre>cout>>Ino;cin.getline(Item,20); _____ //Statement 2 File.write((char*)this,sizeof(Item)); File.close(); }</pre>	2																																				
	(b) Write a function in C++ to count the number of lines present in a text file "STORY.TXT".																																					
	(c) 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.																																					
	<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>																																					
	(a) What do you understand by Degree and Cardinality of a table?																																					
	<p>Consider the following tables ACTIVITY and COACH and answer (b) and (c) parts of this question:</p> <p>Table: ACTIVITY</p> <table><tr><th>A Code</th><th>ActivityName</th><th>Stadium</th><th>Participants Num</th><th>Prize Money</th><th>Schedule Date</th></tr><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></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><tr><th>PCode</th><th>Name</th><th>Acode</th><th></th></tr><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></table>	PCode	Name	Acode		1	Ahmad Hussain	1001		2	Ravinder	1008		3	Janila	1001		4	Naaz	1003		
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(b)	<p>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>	4																				
(c)	<p>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>	2																				
6.																						
(a)	State and verify Demorgan's Laws algebraically.	2																				
(b)	Write the equivalent Boolean Expression for the following Logic Circuit	2																				
	<pre>graph LR P((P)) --- NOT1[NOT] P --- OR1[OR] Q((Q)) --- OR1 Q --- OR2[OR] Q --- NOT2[NOT] NOT1 --- OR1 NOT2 --- OR2 OR1 --- AND[AND] OR2 --- AND AND --- Out[Output]</pre>																					

No.	Questions	Marks																																				
(c)	Write the POS form of a Boolean function F, which is represented in a truth table as follows:	1																																				
	<table><tr><th>U</th><th>V</th><th>W</th><th>F</th></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></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: F(A,B,C,D)= (0,1,2,4,5,6,8,10)	3																																				
7.																																						
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><div>Block A</div><div>Block C</div><div>Block B</div><div>Block D</div></div>																																					

No.	Questions	Marks												
	Center to center distances between various blocks <table><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>	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	
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	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												
	Number of Computers <table><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>	Block A	25	Block B	50	Block C	125	Block D	10					
	Block A	25												
	Block B	50												
Block C	125													
Block D	10													
e1)	Suggest a cable layout of connections between the blocks.													
e2)	Suggest the most suitable place (i.e. block) to house the server of this organisation with a suitable reason.													
e3)	Suggest the placement of the following devices with justification (i) Repeater (ii) Hub/Switch													
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?													
f)	What do you mean by Spam Mails? How can you protect your mailbox from Spams?	1												
g)	Mention any two advantages of Open Source Software over Proprietary Software.	1												