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## HALF YEARLY EXAM TERM I 2017-18

CLASS: XII A Subject: COMPUTER SC

TIME:3 hrs. DATE: 15.9.17 MM:70

Note: This question paper consist of 6 questions and 9 pages

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Q1a. Explain conditional operators with suitable examples. (2)

b. Which C++ header file(s) are essentially required to be included to run/execute the following C++ code : (1)

```
void main()
{
char *word1="Hello",*word2="Friends";
strcat(word1,word2);
cout<<word1;
}
```

c. Rewrite the following program after removing the syntactical errors (if any). Underline each correction. (2)

```
#include<conio.h>
#include<iostream.h>
#include<string.h>
#include<stdio.h>
class product
{
int product_code,qty,price;
char name[20];
public:
product(){
product_code=0;qty=0;price=0;
name=NULL;
}
void entry()
{
cout<<"\n Enter code,qty,price";
cin>>product_code>>qty>>price;
gets(name);
}
void tot_price() {return qty*price;}
};
void main()
```

```
{
p product;
p.entry();
cout<<tot_price();
}
```

d. Write the output of the following C++ program code: (3)

Note: Assume all required header files are already being included in the program.

```
void change(int *s)
{
for(int i=0;i<4;i++)
{
if(*s<40)
{
if(*s%2==0)
*s=*s+10;
else
*s=*s+11;
}
else
{
if(*s%2!=0)
*s=*s-10;
else
*s=*s-11;
}
cout<<*s<<" ";
s++;
}
}
void main()
{
int score[]={25,60,35,53};
change (score);
}
```

e. Write the output of the following c++ program code: Assume all required header files are already being included) (3).

```
class seminar
{
char topic[30];
int charges;
public:
seminar()
{
strcpy(topic,"Registration");
charges=5000;
}
```

```
seminar(char t[])
{
strcpy(topic,t);
charges=5000;
}
seminar(int c)
{
strcpy(topic,"Registration with Discount");
charges=5000-c;
}
void regis(char t[],int c)
{
strcpy(topic,t);
charges=charges+c;
}
void regis(int c=2000)
{
charges=charges+c;
}
void subject(char t[],int c)
{
strcpy(topic,t);
charges=charges+c;
}
void show()
{
cout<<topic<<"@"<<charges<<endl;
}
};
void main()
{
seminar s1,s2(1000),s3("Genetic Mutation"),s4;
s1.show();
s2.show();
s1.subject("ICT",2000);
s1.show();
s2.regis("Cyber Crime",2500);
s2.show();
s3.regis();
s3.show();
s4=s2;
s4.show();
getch();
}
```

f. **Observe the following program carefully and attempt the given questions: (2)**

```
#include <iostream.h>
#include<conio.h>
#include<stdlib.h>
void  main()
{
clrscr();
randomize();
char courses[][10]={"M.Tech","MCA","MBA","B.Tech"};
int ch;
for (int i=1;i<=3;i++)
{ch=random(i)+1
cout<<courses[ch]<<"\t";
}
getch();
}
```

i. **Out of all the four courses stored in the variable courses, which course will never be display in the output and which course will always be displayed at first in the output?**

ii. **Mention the minimum and maximum value assigned to the variable ch?**

g. Observe the following C++ code and find out , which out of the given options i) to iv) are the expected correct output.Also assign the maximum and minimum value that can be assigned to the variable 'Go'. (2)

```
void main()
{ int X [4] ={100,75,10,125};
int Go = random(2)+2;
for (inti = Go; i< 4; i++)
cout<<X[i]<<"$$";
}
```

i. 100$$75 ii. 75$$10$$125$$ iii. 75$$10$$ iv.10$$125$

**Q2.a.** What is the difference between the members in the private visibility mode and the members in the protected visibility mode inside a class? Also give a suitable C++ code to illustrate both. (2)

b) Answer the questions (i) and (ii) after going through the following class: (2)

```
class Exam
{
int Marks;
char Subject[20];
public :
Exam() //Function 1
{
Marks=0;
strcpy(Subject,"Computer");
cout<<"object created\n";
}
```

```
Exam(char S[]) // Function 2
{
Marks =0;
strcpy (Subject,S);
cout<<"object created\n";
}
Exam (int M) // Function3
{
Marks =M;
strcpy(Subject,"Computer");
cout<<"object created\n";
}
Exam(char S[], int M); // Function 4
};
void main()
{
Exam A, B; //Statement 1
Exam C(50); //Statement 2
}
```

(i) Write statement in C++ that would execute Function 4 of class Exam and also write the definition of Function4.

(ii) How many times message "object created" will appear on the screen after running statement 1 and statement 2 in the above code. Also write which feature of OOPs is implemented by Function 1, Function 2, Function 3 and Function4 combined together.

(c) Define a class Restra in C++ with the following description : (4)

**Private Members**

- FoodCode of type int
- Food of type string
- FType of type string
- Sticker of type string
- A member function Getsticker() to assign the following values for sticker as per the given

FType:

| FType | Sticker |
|---|---|
| Vegetarian | GREEN |
| Contains Egg | YELLOW |
| Non-Vegetarian | RED |

**Public members**

- A function GetFood() to allow user to enter values for FoodCode, Food, FType and call function GetSticker() to assign Sticker.
- A function ShowFood() to view the content of all the data members.

d) Answer the questions (i) to (iv) based on the following: (4)

```
class ITEM
{
```

```
int Id;
char IName[20];
protected:
float Qty;
public:
ITEM();
void Enter();
void View();
};
class TRADER
{
int DCode;
protected:
char Manager[20];
public:
TRADER();
void Enter();
void View();
};
class SALEPOINT :public ITEM, private TRADER
{
char Name[20],Location[20];
public:
SALEPOINT();
void EnterAll();
void ViewAll();
};
```

(i) Which type of Inheritance out of the following is illustrated in the above example? Also write the total number of bytes required for creating the object of class SALEPOINT.

(ii) Write the names of all the data members, which are directly accessible from the member functions of class SALEPOINT.

(iii) Write the names of all the member functions, which are directly accessible by an object of class SALEPOINT.

(iv) What will be the order of execution of the constructors, when an object of class SALEPOINT is declared?

e. Differentiate between data abstraction and data hiding. (2)

Q3. a. Write the command to place the file pointer at the 10th and 4th record starting position using seekp() or seekg() command. File object is 'file' and record name is 'STUDENT'. (1)

b. Write a function in C++ to count and display the no of three letter words in the file "VOWEL.TXT". (2)

Example:
If the file contains:
A boy is playing there. I love to eat pizza. A plane is in the sky.
Then the output should be: 4

c. Given the binary file CAR.Dat, containing records of the following class CAR type: (3)

```
class CAR
{
int C_No;
char C_Name[20];
float Milage;
public:
void enter( )
{
cin>> C_No ; gets(C_Name) ; cin >> Milage;
}
void display( )
{
cout<< C_No ; cout<<C_Name ; cout<< Milage;
}
int RETURN_Milage( )
{
return Milage;
}
};
```

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.

Q4. a. Define degree and cardinality. Based upon given table write degree and cardinality. (2)

| PatNo | PatName | Dept | DocID |
|---|---|---|---|
| 1 | Leena | ENT | 100 |
| 2 | Surpreeth | Ortho | 200 |
| 3 | Madhu | ENT | 100 |
| 4 | Neha | ENT | 100 |
| 5 | Deepak | Ortho | 200 |

b. Write SQL commands for the queries (i) to (iv) and output for (v) & (viii) based on a table COMPANY and CUSTOMER (6)

Company

| CID | NAME | CITY | PRODUCT NAME |
|---|---|---|---|
| 111 | SONY | DELHI | TV |
| 222 | NOKIA | MUMBAI | MOBILE |
| 333 | ONIDA | DELHI | TV |
| 444 | SONY | MUMBAI | MOBILE |
| 555 | BLACKBE | MADRAS | MOBILE |

| | | | |
|---|---|---|---|
| | RRY | | |
| 666 | DELL | DELHI | LAPTOP |

Custmor

| custid | NAME | PRICE | QTY | CID |
|---|---|---|---|---|
| 101 | Rohan Sharma | 70000 | 20 | 222 |
| 102 | Deepak Kumar | 50000 | 10 | 666 |
| 103 | Mohan Kumar | 30000 | 5 | 111 |
| 104 | Sahil Bansal | 35000 | 3 | 333 |
| 105 | Neha Soni | 25000 | 7 | 444 |
| 106 | Sonal Aggarwal | 20000 | 5 | 333 |
| 107 | Arjun Singh | 50000 | 15 | 666 |

(i) To display those company name which are having prize less than 30000.
(ii) To display the name of the companies in reverse alphabetical order.
(iii) To increase the prize by 1000 for those customer whose name starts with 'S' (iv) To add one more column totalprice with decimal(10,2) to the table customer
(v) SELECT COUNT(*) ,CITY FROM COMPANY GROUP BY CITY;
(vi) SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY>10 ;
(vii) SELECT AVG(QTY) FROM CUSTOMER WHERE NAME LIKE "%r%;
(viii) SELECT PRODUCTNAME,CITY, PRICE FROM COMPANY,CUSTOMER WHERE COMPANY.CID=CUSTOMER.CID AND PRODUCTNAME="MOBILE";

c. Define Projection. (2)
d. Define Foreign key. (1)

5.a. State and Verify Absorption law algebraically (2)
b. Draw a logic circuit for the following Boolean expression: ab+c.d'. (2)
c. Write the SOP form of a Boolean function F, which is represented in a truth table as follows: (1)

| A | B | C | F |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |

| | | | |
|---|---|---|---|
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 0 |

d. Obtain a simplified from for a Boolean expression: (3)
F (U, V, W, Z) = Π (0, 1, 3, 5, 6, 7, 15)

e. State and define principle of Duality. (2)

f. Obtain the minimal form for the following Boolean expression using Karnaugh's Map.
F(A,B,C,D)= ∑(1,3,4,5,6,7,12,13) (3)

Q6a. Write 1 advantage and 1 disadvantage of Bus topology. (2)

b. SunRise Pvt. Ltd. is setting up the network in the Ahmadabad. There are four departments named as MrktDept, FunDept, LegalDept, SalesDept. (4)

| Distance between various buildings is as given: | |
|---|---|
| MrktDept to FunDept | 80 m |
| MrktDept to LegalDept | 180m |
| MrktDept to SalesDept | 100 m |
| LegalDept to SalesDept | 150 m |
| LegalDept to FunDept | 100 m |
| FunDept to SalesDept | 50 m |

Number of Computers in the buildings:

| | |
|---|---|
| MrktDept | 20 |
| LegalDept | 10 |
| FunDept | 08 |
| SalesDept | 42 |

i) Suggest a cable layout of connections between the Departments and specify topology.
ii) Suggest the most suitable building to place the server with a suitable reason.
iii) Suggest the placement of i) modem ii) Hub /Switch in the network.
iv) The organization is planning to link its sale counter situated in various part of the same city/ which type of network out of LAN, WAN, MAN will be formed? Justify.

c. Name the protocol (1)
i. Used to transfer voice using packet switched network.
ii. Used for chatting between 2 groups or between 2 individuals.

d. What is an IP Address? (1)

e. What is HTTP? (1)

f. Explain the importance of Cookies. (1)

g. How is 4G different from 3G? (1)

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