

INTERNATIONAL INDIAN SCHOOL DAMMAM
FIRST TERMINAL EXAMINATION, July 2017

Computer Science –Class XII
SET-A

Time:3 Hrs
Marks:70

1. (a) Find the correct identifiers out of the following: (2)
For, while, INT, delete, 1stName, Add+Subtract, name1, CASE
- (b) What is the difference between call by value and call by reference? Give examples. (2)
- (c) What is the difference between type casting and automatic type conversion? (2)
- (d) Ananya typed the following C++ code and during compilation she found some errors. Write the names of the header files, which Ananya needs to include for the successful compilation and execution of the following code: (2)
- ```
void main()
{
char Txt[]="Welcome";
for(int C=0;C<strlen(Txt);C++)
Txt[C]=Txt[C]+1;
cout<<Txt<<setw(5);
exit(0);
}
```
- (e) Rewrite the following C++ code after removing any/all syntactical errors with each correction underlined. (2)  
Note: Assume all required header files are already being included in the program.
- ```
typedef char[25] NAME;  
void main()  
{  
name NAME;  
gets(name);  
cout<<name[0]<<' \t'<<name[1];  
cout<<name<<endl;  
}
```
- (f) Find the output of the following program. (Assume that all necessary header files are included). (2)
- ```
#include<iostream.h>
void change(char a[])
{
for(int i=0;a[i]!='\0';i++)
```

```

{
if(a[i]>=97&&a[i]<=122)
a[i]--;
else if(a[i]>='0' &&a[i]<='9')
a[i]=a[i-1];
else if(a[i]>='A' &&a[i]<='Z')
a[i]+=32;
else
a[i]='#';
}
}
void main()
{
char str[]="FIIfA wOrLd-2014";
change(str);
puts(str);
}

```

- (g) Write the output of the following C++ program code: (Assume that all necessary header files are included). (2)

```

void Location(int &X,int Y=4)
{
Y+=2;
X+=Y;
}
void main()
{
int PX=10,PY=2;
Location(PY);
cout<<PX<<" " <<PY<<endl;
Location(PX,PY);
cout<<PX<<" " <<PY<<endl;
}

```

- (h) Find the output of the following program: (3)

```

include<iostream.h>
class METRO
{
int Mno,TripNo,PassengerCount;
public:
METRO(int Tmno=1)
{
Mno=Tmno;
TripNo=0;
PassengerCount=0; }
}

```

```

void Trip(int PC=20)
{
TripNo++;PassengerCount+=PC;
}
void StatusShow()
{
cout<<Mno<<" "<<TripNo<<" "<<PassengerCount<<endl;
}
};
void main()
{
METRO M(5),T;
M.Trip();
T.Trip(50);
M.StatusShow();
M.Trip(30);
T.StatusShow();
M.StatusShow();
}

```

- (i) 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 course[][6]={"M.Tech","MCA","MBA","B.Tech"};
int ch;
for(int i=1;i<=3;i++)
{
ch=random(i)+1;
cout<<course[ch]<<"\t";
}
getch();
}

```

1. Out of all the four courses stored in the variable course, which course will never be displayed in the output and which course will always be displayed at first in the output?
2. Mention minimum and maximum value assigned to the variable **ch**.

- 2 (a) Differentiate between public and private visibility modes in the context of Object Oriented Programming using suitable example. (2)
- (b) What is a copy constructor? Give a suitable example in C++ to illustrate with its definition within a class and a declaration of an object with the help of it. (2)
- (c) Answer the questions (i) and (iii) after going through the following class. (4)

```

class Seminar
{
int Time;
char subject[20];
float Fees;
public:
Seminar() //Function 1
{
Time=30;
strcpy(subject, "English");
Fees=1500;
cout<<"Seminar starts now"<<endl;
}
void Lecture() //Function 2
{
cout<<"Lectures in the seminar on"<<endl;
}
Seminar(int Duration, char s[], float f); //Function 3
~Seminar() //Function 4
{
cout<<"Vote of thanks"<<endl;
}
};
void main()
{
_____ Line 1
_____ Line 2
}

```

- i. In Object Oriented Programming ,what is Function 4 referred and when does it get invoked/called?
- ii. In Object Oriented Programming ,which concept is illustrated by Function 1 and Function 3 together? Fill in the blank statements in Line 1 and Line 2 to execute Function 1 and Function 3 respectively?
- iii. Write the definition for Function 3?

- (d) Define a class **Customer** in C++ with the following specifications: (4)

**Private Members:**

Customer\_no of type integer

Customer\_name of type string

Qty of type integer

Price, TotalPrice, Discount, NetPrice of type float

**CalDiscount()**-To calculate Discount according to TotalPrice and calculate NetPrice**TotalPrice=Price\*Qty**

| TotalPrice        | Discount          |
|-------------------|-------------------|
| >=5000            | 25% of TotalPrice |
| >=25000 and <5000 | 15% of TotalPrice |
| <25000            | 10% of TotalPrice |

**NetPrice=TotalPrice-Discount****Public Members:**

- A constructor to assign initial values of customer\_no as 111, Customer\_name as "Leena", Qty as 0 and Price, Discount and NetPrice as 0.
- Input()-To read data members (Customer\_no, Customer\_name, Qty and Price) and call CalDiscount().
- Show():To display Customer details

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

```

class First
{
int X1;
protected:
float X2;
public:
First();
void Enter1();
void Display1();
};
class Second: private First
{
int Y1;
protected:
float Y2;
public:
Second();
void Enter2();

```

```

void Display();
};
class Third: public Second
{
int Z1;
public:
Third();
void Enter3();
void Display();
};
void main()
{
Third T;
_____//Statement 1
}

```

- i. Which type of inheritance \_\_\_\_\_ is illustrated in the above example?
- ii. Write the names of all the member functions, which are directly accessible by the object T of class Third as declared in the main() function.
- iii. Write Statement 1 to call Display() of class Second from the object T of class Third.
- iv. What will be the order of execution of the constructors, when the object of class Third is declared inside main()?

- 3 (a) What is the function of select and project operations? Explain with example. (2)
- (b) Explain Primary Key and Alternate Key with example. (2)
- (b) Observe the PARTICIPANTS and EVENTS tables carefully and write the name of the RDBMS operation which will be used to produce the output as shown in RESULT. Find the degree and cardinality of the RESULT. (2)

Table:PARTICIPANTS

| PNO | NAME     |
|-----|----------|
| 1   | Anuroopa |
| 2   | John     |
| 3   | Kranthi  |

Table:EVENTS

| EVENTCODE | EVENTNAME    |
|-----------|--------------|
| 1001      | IT QUIZ      |
| 1002      | Group Debate |

Table:RESULT

| PNO | NAME     | EVENTCODE | EVENTNAME    |
|-----|----------|-----------|--------------|
| 1   | Anuroopa | 1001      | IT QUIZ      |
| 1   | Anuroopa | 1002      | Group Debate |
| 2   | John     | 1001      | IT QUIZ      |
| 2   | John     | 1002      | Group Debate |
| 3   | Kranthi  | 1001      | IT QUIZ      |
| 3   | Kranthi  | 1002      | Group Debate |

- (b) Consider the following tables CARDEN and CUSTOMER and answer the following questions:

Table:CARDEN

| CarCode | CarName | Make     | Color  | Capacity | Charge |
|---------|---------|----------|--------|----------|--------|
| 501     | A-Star  | Suzuki   | RED    | 3        | 14     |
| 503     | Indigo  | Tata     | SILVER | 5        | 12     |
| 502     | Innova  | Toyota   | WHITE  | 7        | 15     |
| 509     | SX4     | Suzuki   | SILVER | 4        | 14     |
| 510     | C Class | Mercedes | RED    | 4        | 35     |

Table:CUSTOMER

| CCode | Cname       | CarCode |
|-------|-------------|---------|
| 1001  | Hemant Sahi | 501     |
| 1002  | Raj Lal     | 509     |
| 1003  | Feroza Shah | 503     |
| 1004  | Ketan Dhal  | 502     |

Write SQL commands for the following statements:

- i. To display the names of all the silver coloured Cars.
- ii. To display the name of car, make and capacity of cars in descending order of their sitting capacity
- iii. To display the highest charges at which a vehicle can be hired from CARDEN
- iv. To display the customer name and the corresponding name of the cars hired by them.
- v. To increase the Charge of Innova by 10 Rs.
- vi. To delete the details of Hemant Sahi from the table CUSTOMER.
- vii. To add one row to the the table CUSTOMER with the following details (1005,Warsi,510)

(7)

Give the output of the following SQL queries

- (a) SELECT COUNT(DISTINCT Make) FROM CARDEN;
- (b) SELECT AVG(Charge),MIN(Charge)FROM CARDEN;
- (c) SELECT COUNT(\*) ,Make FROM CARDEN GROUP BY Make;
- (d) SELECT CarName FROM CARDEN where Capacity=4;
- (e) SELECT Charges\*20 from CARDEN where capacity>4;

(3)

(f) SELECT \* FROM CUSTOMER WHERE CName LIKE '%l';

4 (a) State and verify Demorgan's Laws algebraically. (2)

(b) Draw the Logic Circuit of the following Boolean Expression using only NAND Gates. (2)

$$A \cdot (B + C')$$

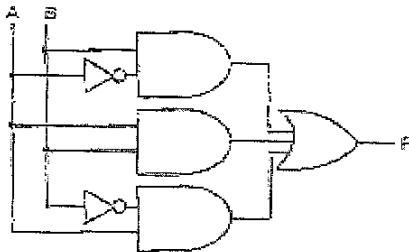
(c) Prove algebraically. (2)

$$X \cdot Y + X' \cdot Z + Y \cdot Z = X \cdot Y + X' \cdot Z$$

(d) Convert the following Boolean expression into its equivalent Canonical Product of Sum Form(POS): (1)

$$A \cdot B' \cdot C + A' \cdot B \cdot C + A' \cdot B \cdot C'$$

(e) Write the equivalent Boolean Expression F for the following circuit diagram. (2)



(f) Reduce the following Boolean Expression using K-Map. (3)

$$F(U, V, W, Z) = \sum(0, 1, 2, 3, 4, 10, 11)$$

(g) Write the dual of the Boolean expression. (1)

$$(X + Y) \cdot (X' + Z') \cdot (Y + Z)$$

(h) Derive a Canonical POS expression for a Boolean function G, represented by the following truth table. (1)

| X | Y | Z | G(X,Y,Z) |
|---|---|---|----------|
| 0 | 0 | 0 | 0        |
| 0 | 0 | 1 | 0        |
| 0 | 1 | 0 | 1        |
| 0 | 1 | 1 | 0        |
| 1 | 0 | 0 | 1        |
| 1 | 0 | 1 | 1        |
| 1 | 1 | 0 | 0        |
| 1 | 1 | 1 | 1        |

(i) Obtain the minimal form for the following Boolean expression using K-Map. (3)

$$F(P, Q, R, S) = \prod(0, 1, 4, 5, 6, 7, 11, 12, 13, 14, 15)$$



(j) Correct the following Boolean statements:

(2)

I.  $A+1=A$

II.  $(B')' = B'$

II.  $X.X' = 1$

IV.  $(A.B)' = A' . B'$

.....ALL THE BEST.....