

DELHI PUBLIC SCHOOL :: SURAT
INFORMATICS PRACTICES KEY

SECTION – A

1) Answer the following questions :

- a) Define i) Freeware ii) Shareware [2]
Freeware : The term freeware is generally used for software, which is available free of cost and which allows copying and further distribution, but no modification and whose source code is not available. Free should not be mistaken for open software or for free software.

Shareware : Share is software, which is made available with the right to distribute copies. It is stipulated that if one intends to use the software, often after a certain period of time, then a license fee should be paid. Shareware is not the same thing as free and open source software(FOSS) for two main reasons : i) the source code is not available ii) modification to the software are not allowed.

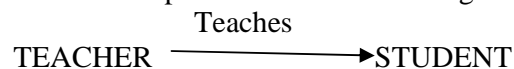
- b) Define the following terms: [2]
i) Entity
ii) Attributes
iii) Entity Set
iv) Relationship

Entity : An entity is tangible object that exists in this real world. Or we can say that all such items about which some relevant information may be stored are called entities. For eg TEACHER, STUDENT

Attributes : The qualities of an entity which can be stored as information are called the attributes. For example, if TEACHER is an entity then Teacher_id, Teacher_name are attribute.

Entity set : A set of entities of some type i.e which share common properties constitutes an entity set. For example, STUDENT is an entity set.

Relationship : A relationship is an association among several entities.



- c) Explain the term metadata using suitable example. [2]
The information that describes the model and definition of the source data elements is called Metadata.

In other words Metadata is data about data.

e.g. In a table storing item details, the description of table's data such as

itemno	integer,
itemname	varchar2(30),

price float,
 qty integer
 is the metadata.

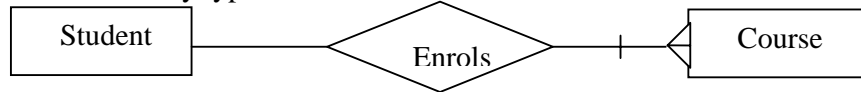
d) Differentiate ER Modeling and Object Modeling Techniques. [2]

ER Modeling	Object Modeling
It's goal is normalization and fast retrieval of data.	It's goal is to model a business process using real world objects.
Cannot map real world models as it does not consider/include behaviour.	Can map real world models as it includes behaviours (relationships, calculations and relations)
Offers a static architecture	Offers a dynamic architecture
Grouping is possible only on the basis of entity types	Flexible grouping possible as objects can also be grouped on the basis of behaviour types.

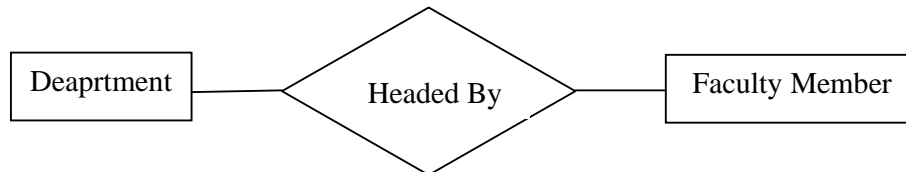
e) Identify the various types of relationships from the following and also show them diagrammatically: [2]

- i) A student enrolls for various courses in a college.
- ii) A department is headed by a faculty member.

i) One-to-Many type



ii) One-to-One type



2) Answer the following questions :

a) Write one difference and one common characteristic between a control and a variable in VB. [2]

Difference : Controls react to their corresponding events whereas variables do not have any events.

Similarity : Both controls and variables occupy some space in memory.

b) What are conditional or decision control statements? Name the two conditional statements used in Visual Basic. [2]

Decision control statements are those statements which are used to select or decide the set of statements to be executed under certain conditions. These statements are used to decide one set of statements to be executed from the available alternatives depending upon the result of a condition.

- i) If..Else..End if ii)Select Case ... End Select
- c) What are built-in functions? What are different types of built-in functions available in Visual basic? [2]

Functions that are predefined and already available in VB to carry out routine tasks on built-in data types. They are also known as Library Functions.

There are following types of built-in VB functions:

- i) String functions
 - ii) Numeric functions
 - iii) Date and Time functions
 - iv) Miscellaneous functions
- d) Explain the following terms: [4]
 - i) Modular Programming
 - ii) Object Oriented Programming
 - iii) Event Driven Programming
 - iv) RAD

(i) Modular Programming : An approach of dividing a big programming task into small manageable functionally independent but logically associated program modules.

(ii) Object Oriented Programming :A programming methodology where each real world entities associated with the problem domain is represented in terms of classes and objects, is known as Object Oriented Programming.

(iii) Event Driven Programming :In this type of programming the Events plays major role to execute a set of program code. Events are the actions such as Mouse Click, Double Click, Key Press etc.

(ii) RAD : Rapid Application It is a feature of programming environment that facilitates quick generation of solutions by means of visual tool, designers and wizards.

3) Answer the following questions :

- a) What is database fragmentation? How is it related to distributed databases? [2]

Database fragmentation refers to dividing the database tables in small pieces called fragments.

Database fragmentation is related to distributed database in the sense that for a distributed database, the data need to be distributed among many sites. For this distribution, database fragmentation plays an important role
- b) What are PL/SQL blocks? How many types of PL/SQL block definitions exists? Explain with suitable examples. [4]

PL/SQL block is a set of PL/SQL statements, which can be executed to perform some identifiable task

Following are the PL/SQL Block types with general syntax

Anonymous: PL / SQL Block without any name or headers. An anonymous block is not stored in the database and is recompiled every time it is executed.

Syntax for Declaring an Anonymous PL/SQL Block

```
[DECLARE]
BEGIN
--Statements
[EXCEPTION]
END;
```

Named Block : A named block is a block having a header. The named blocks are stored in the database in compiled form, so there is no wastage of time in recompiling the code before each execution. Named block can take parameters and can be called by various front-end applications that connected to the database. Procedure, Functions, Triggers are example of named block.

Procedure : Syntax for Declaring a Procedure

```
CREATE OR REPLACE PROCEDURE proc_name
IS
BEGIN
--Statements
[EXCEPTION]
END;
```

Function: A function is similar to a procedure and must return a value.

Syntax for Declaring a Function

```
CREATE OR REPLACE FUNCTION name
RETURN datatype
IS
BEGIN
--Statements
RETURN value;
[EXCEPTION]
```

- c) What is a trigger? Explain two types of triggers available in PL/SQL with example.[4]

A trigger is a stored procedure that defines an action that the database should take when some database related event (such as insert, update, delete) occurs. We can say that database trigger is set of PL/SQL statements that executes each time an event (such as an UPDATE, INSERT or DELETE statement) occurs on the database. Two types of triggers:

- i) Row level trigger : Row triggers execute once for each row that is inserted, updated or deleted by a DML statement. For example, even if an UPDATE statement makes changes, say 10 rows, a row level trigger will be executed once for each affected row i.e 10 times.
- ii) Statement level trigger : Statement level triggers are executed once for triggering statement irrespective of the number of rows affected by it e.g even if an UPDATE statement makes changes in say, 10 rows, a statement level trigger will be executed only once.

- 4) Read the following case study and answer the questions that follows:

Mr. Gupta is working in a multi national company. His family members visit a shopping mall and purchased a variety of products including garments. The total amount goes into some thousands. The owner of the shopping mall provides handsome discounts of credit cards as:

Card Type	Discount on Amount
HDFC	5%
Visa Card	10%
City Bank	15%
Standard Chartered	20%
ICICI	22%
None	0%

Carefully observe the following Screen:

The form details are given in the following table:

Object	Object Name	Description
Form	frmDiscount	The main form object
Text Boxes	txtAmt	To enter Shopping Amount
	txtNetPrice	To display Net Price
Option Buttons	optHDFC	To select card type
	optVisa	
	optCityBank	
	optStanChart	
	optICICI	
	optNone	
Command Buttons	cmdClear	To clear the text boxes
	cmdNetPrice	To calculate Net Price

- a) Write the value of the caption property of the command button cmdNetPrice. [1]
- b) Write the code for command button cmdClear to clear the text boxes. [1]
- c) Write a function procedure which takes shopping amount as parameter to find the discounted price. [4]
- d) Write a procedure to find the Net Billing Price for Mr. Gupta [4]

a) Calculate Net Price

```
b) Private Sub cmdClear_Click()
    txtAmt.Text = ""
    txtNetPrice.Text = ""
End Sub
```

```
c) Private Function discount(namt As Double) As Double
    If optHDFC.Value = True Then
        discount = namt * (5 / 100)
    ElseIf optVisa.Value = True Then
        discount = namt * (10 / 100)
    ElseIf optCityBank.Value = True Then
        discount = namt * (15 / 100)
    ElseIf optStanchar.Value = True Then
        discount = namt * (20 / 100)
    ElseIf optICICI.Value = True Then
        discount = namt * (22 / 100)
    ElseIf optNone.Value = True Then
        discount = 0
    End If
End Function
```

```
d) Private Sub cmdNetPrice_Click()
    Dim amount As Double, netPrice As Double, disc As Double
    amount = Val(txtAmt.Text)
    disc = discount(amount)
    netPrice = amount - disc
    txtNetPrice.Text = netPrice
End Sub
```

5) Answer the following questions :

- a) Write the output of the following code segment: [2]

```
Private Sub Command1_Click()
    Dim a, b, c As Long
    a = 5
    b = 6
    c = Results((a), (b))
    Print "The sum is : " & c
End Sub
```

```
Private Function Results(x&, y As Long) As Long
    Print "The sum is : " & x + y
    Results = x + y + 10
```

End Function

Output

The sum is : 11

The sum is : 21

b) Write the output of the following: [2]

i) Print DateDiff("d", #5/18/2010#, #5/1/2010#)

ii) print instr(5,"Test String","T",1)

i) -17

ii) 7

c) A student wants to write a procedure to find if a given year is a leap year or not. He had written the following code segment and he is unable to correct Some of the errors in the code. Find the errors and rewrite the corrected code underlining the corrections made. [2]

```
Private sub cmdLeapyear_Click()
    Y = val(txtyear)
    If y mod 100 = 0 and y mod 400 = 0
        MsgBox "It is a leap year"
    Else if y mod 4 = 0
        MsgBox "It is a leap year"
    Else
        MsgBox "It is not a leap year"
End Sub
```

```
Private Sub cmd_leapyear_Click()
    y = Val(txtyear)
    If y Mod 100 = 0 And y Mod 400 = 0 Then
        MsgBox "It is a leap year"
    ElseIf y Mod 4 = 0 Then
        MsgBox "It is a leap year"
    Else
        MsgBox "It is not a leap year"
    End If
End Sub
```

d) Write a Visual Basic function which takes a string as an argument and toggle(invert) the case of each character of a string i.e. characters in upper case should be converted to lower case and vice versa. You are not allowed to use UCASE or LCASE functions. [4]

```
Private Function ToggleCase(sname As String) As String
    Dim i As Integer, code As Byte
    For i = 1 To Len(sname)
        code = Asc(Mid(sname, i))
        Select Case code
            Case Asc("a") To Asc("z")
                Mid(sname, i, 1) = Chr(code - 32)
            Case Asc("A") To Asc("Z")
```

```

Mid(sname, i, 1) = Chr(code + 32)
End Select
Next i
ToggleCase = sname
End Function

```

SECTION – C

6) Answer the following questions :

a) Find the output of the following code in PL/SQL: [2]

```

DECLARE
    Y NUMBER;
    X NUMBER;
BEGIN
    Y := 5;
    FOR X in 1..5
    Loop
        If x > y then
            DBMS_OUTPUT.PUT_LINE(y);
        ELSE
            DBMS_OUTPUT.PUT_LINE(x);
        END IF;
        Y := Y - 1;
    END LOOP;
END;

```

1
2
3
2

b) Find the errors from the following PL/SQL code and rewrite the corrected code underlining the correction made: [2]

```

DECLARE
    v_bonus number DEFAULT 10;
    v_commission NUMBER DEFAULT [30];
    v_status BOOLEAN :=True
BEGIN;
    V_bonus < v_commission := v_status;
END;

```

```

DECLARE
    v_bonus number DEFAULT 10;
    v_commission NUMBER DEFAULT 30;
    v_status BOOLEAN :=True;
BEGIN
    V_status := V_bonus < v_commission;
END;

```

c) Write a PL/SQL procedure called FACTORIAL that takes an integer as parameter, finds its factorial and display it.(eg Factorial 4 = 4 x 3 x 2 x 1) [4]


```

Create or replace procedure factorial(n IN number) is
  Fact number := 1;
  Begin
    For I in 1..n loop
      Fact := fact * I;
    End loop;
    Dbms_output.put_line('Factorial is ' || fact);

  End;
/

```

d) Write a PL/SQL script to input a number. If the number is even, print its square otherwise print its cube. [2]

```

DECLARE
  Num NUMERIC;
BEGIN
  Num := &NUMBER;
  If mod(num,2) = 0 then
    Dbms_output.put_line(num**2);
  Else
    Dbms_ouput.put_line(num**3);
  End if;
End;

```

7. Answer the questions based on the table CompLab given below:

Table : **CompLab**

Column Name	Data Type	Size	Constraint	Description
It_Code	NUMBER	4	PRIMARY KEY	Item Code
It_Cat	CHAR	1	H' OR 'S'	Item Category as Hardware or Software
It_Name	VARCHAR2	25		Name of the item
It_Cost	NUMBER	8,2	NOT NULL	Cost of each unit of an item
It_Qty	NUMBER	3		Item Quantity in the Lab
Dt_Pur	DATE			Date of Purchase

- a) Write the SQL command to create the table CompLab including the constraints. [2]
- b) Write the SQL command to display the details of the item with the maximum It_Cost. [2]
- c) Write the PL/SQL code to increase the item cost by 10% for an item whose code is accepted from the user and whose date of purchase is later than 12-Dec-2009. [2]
- d) Write the PL/SQL code to create a stored procedure Disp_Details to display the details of all the items with It_cat as 'H'. The code should also display the total quantity of all such items. [4]

a) Create table CompLab

```

(it_code number(4) Primary key,
It_cat char(1) check(it_cat = 'H' or it_cat = 'S'),
It_name varchar2(25) not null,
It_cost number(8,2),
It_qty number(3),
Dt_pur date);

```

b) Select * from complab where it_cost = (select max(it_cost) from complab);

c) Declare

```
Code number;
```

```
Begin
```

```
Code := &itemcode;
```

```
Update complab set it_cost = it_cost + it_cost * 0.1
```

```
Where it_code = code and dt_pur > to_date('12-Dec-2009');
```

```
End;
```

d) Create or replace procedure disp_details()

```
Cursor compCursor is
```

```
Select * from complab where it_code = 'H';
```

```
compRec compLab%rowtype;
```

```
qty number;
```

```
begin
```

```
open compCursor;
```

```
qty := 0;
```

```
loop
```

```
fetch compCursor into compRec;
```

```
EXIT WHEN compCursor%Notfound;
```

```
Dbms_output.put_line('Code' || emprec.it_code);
```

```
Dbms_output.put_line('Category' || emprec.it_cat);
```

```
Dbms_output.put_line('Name' || emprec.it_name);
```

```
Dbms_output.put_line('Cost' || emprec.it_cost);
```

```
Dbms_output.put_line('Quantity' || emprec.it_qty);
```

```
Dbms_output.put_line('DateofPurchase' || emprec.it_dt_pur);
```

```
Qty := qty + emprec.it_qty;
```

```
End loop;
```

```
Dbms_output.put_line('Total Quantity' || qty);
```

```
Close compcursor;
```

```
End;
```
