Important Note:

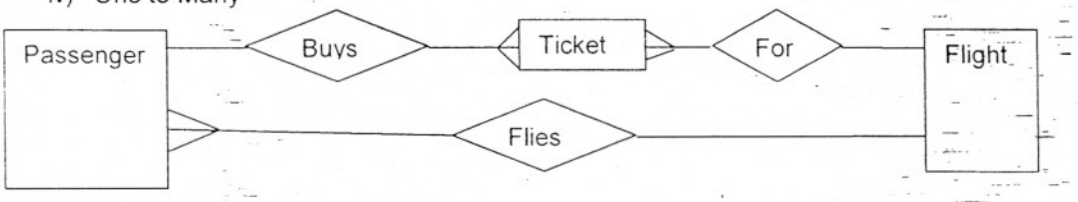
- **All answers provided in the marking scheme are SUGGESTIVE.**
- **Examiners are requested to accept all possible alternative correct answers.**
- **Case sensitivity to be ignored for commands and identifiers in Visual Basic.**
- **Headers for function/procedures to be ignored in Visual Basic.**
- **Semicolon termination and case sensitivity to be ignored in SQL statements.**
- **All equivalent SQL commands for a given query must be accepted.**

Section – A

Q1.	Answer the following questions		
	(a)	Name any **four** application areas of business computing.	2
	Ans:	Application areas: 1. Inventory Control 2. Financial Accounting 3. Pay-Accounting System 4. Invoice Management System 5. Personal Management System/HRD System 6. Fee Management system 7. Result Analysis System 8. Admission Management System 9. Income Tax Management System	
		(½ Mark each for mentioning any 4 correct application areas)	
	(b)	What are the following software used for? (i) Python (ii) Linux	2
	Ans:	(i) Python is used in application domains such as : • Web and internet development (writing CGI scripts) • Database Access • Scientific and numeric computing • Also provides support for network/game programming (ii) Linux is an open source operating system used as a server or desktop (PC).	
		(1 Mark for mentioning any one correct point for Python) ***(1 Mark for mentioning usage of Linux or specifying it as an Operating System)***	
	(c)	Expand the terms OSI and GNU.	2
	Ans:	OSI – Open Source Initiative / Open System Interconnection GNU – **Not Unix** or **GNU Not Unix**	
		(1 Mark for each expansion)	
	(d)	Mention any two types of relationships that can be set up between two relations. Explain the concept of ER Model using the case study of a Air Ticketing System that has three entities Ticket, Passenger and Flight. Assume that each passenger can buy more than one ticket.	4

Ans:

i) Many to Many relationships
ii) Many to One relationship
iii) One to One relationship
iv) One to Many



(1 mark each for any 2 types of relationships)
(2 marks for showing any two of three relationships with equivalent representation as there are many ways to represent the concept of one-to-one, one-to-many)
NOTE: Relationship between entities can be represented by any name. Each relationship may be shown independently also.

Q2. Answer the following questions

(a) Differentiate between the Do While.....Loop and Do....Loop While loops of Visual Basic giving a suitable example of each. 2

Ans:

DO While...Loop	Do...Loop While

1. Entry Controlled loop in which condition is checked before the entry into the loop
2. Minimum number of times loop executes is zero.
Example:
`X=10`
`DO WHILE x>1`
`PRINT X`
`X=X-1`
`LOOP`
	1. Exit controlled loop in which condition is checked at the end.
	2. Minimum number of times loop executes is once.
	Example:
	`X=10`
	`DO`
	`PRINT X`
	`X=X-1`
	`LOOP WHILE x>1`

(1 Mark for any one correct difference)
(1 Mark for any one correct example)
OR
(2 Marks for example with explanation)

(b) Name and explain the usage of any two types of procedures available in Visual Basic. 2

Ans:

i) Function Procedures
ii) Sub Procedures
iii) Property Procedures
iv) Event Procedures

Usage: These are sub-programs or modules containing instructions, which can be called and executed from any other part of the program/project.

(½ Mark each for mentioning any two correct procedure names)
(½ Mark each for their valid usage)

(c) What are data-bound controls? Name any two intrinsic data-bound controls that can be used on a form. 2

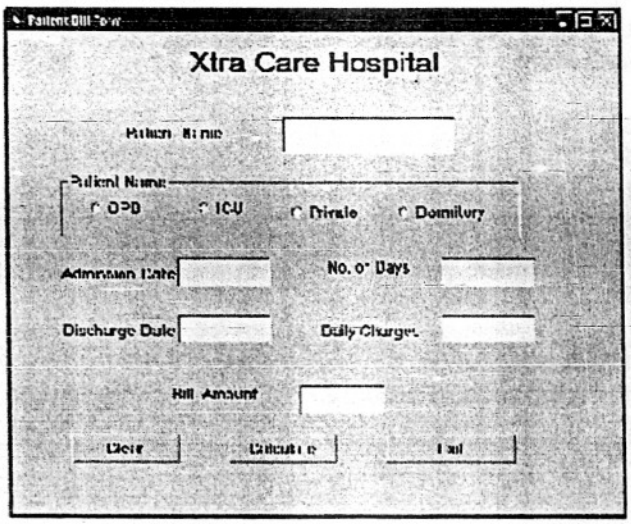
	Ans:	A data bound control connects a control in Visual Basic to a database table. Intrinsic data-bound controls used on a form are: i) Checkbox ii) Combobox iii) Image control iv) Label v) Listbox vi) Picturebox vii) Textbox	
		(1 Mark for explanation) ***(½ Mark each for any 2 intrinsic/standard controls)***	
	(d)	Explain the term ADO. Name and explain three different methods used to navigate through ADO recordsets.	4

	Ans:	ADO stands for ActiveX Data Objects. ADO enables us to write an application to access and manipulate data in a database server through an OLEDB/ADODC/ODBC provider.
		Methods:
		`Movenext`
		`Movefirst`
		`MovePrevious`
		`Movelast`
		`Move`	

		(1 Mark for Explaining ADO) ***(1/2 Mark each for naming any three of the above mentioned methods)*** ***(1/2 Mark each for explaining any three of the above mentioned methods)***	
Q3.	**Answer the following questions**		
	(a)	Differentiate between TCL and DCL commands. Name one TCL and one DCL command.	2
	Ans:		

TCL	DCL
Transaction Control (TCL) statements are used to manage the changes made to the table by DML statements. It allows statements to be grouped together into logical transactions. o **COMMIT** o **SAVEPOINT** o **ROLLBACK (ROLLBACK TO)**	Data Control Language is used for controlling access to data. That is a user can access any data based on the privileges given to him/her. Some examples: o **GRANT** o **REVOKE**

		(1 Mark for difference) ***(½ Mark for giving one example of each)***	
	(b)	Name the keyword used to: (i) Allow duplicate rows in a query. (ii) Avoid duplicate rows in a query.	2
	Ans:	(i) ALL (By default) / SELECT *	

		(ii) DISTINCT	
		(1 Mark for each keyword)	
	(c)	Mention any two limitations of SQL.	2
	Ans:	1. Procedural programming not supported in standard SQL 2. No Exception handling capabilities 3. Does not support Object Oriented Programming 4. Does not support Report writing	
		(1 Mark each for mentioning any 2 limitations)	
	(d)	Define the terms Primary key and Alternate key with respect to a database.	2
	Ans:	Primary Key is any attribute(s) which uniquely identify a row/tuple in a relation/table. Alternate key is any other attribute(s) which can serve as a Primary Key but has not been chosen as a primary key.	
		(1 Mark for each correct definition)	
	(e)	Differentiate between Before and After type triggers.	2
	Ans:	'Before Trigger' is executed/fired/activated/invoked before any DML statement. 'After Trigger' is executed/fired/activated/invoked after any DML statement.	
		(2 Marks for correct difference OR examples explaining the difference)	
		SECTION – B	
Q4.	Read the following case study and answer the questions that follow : Xtra Care Hospital has computerized its billing. A new bill is generated for each patient. The hospital allows four different types of patients to take admission. The daily charges are based on the type of patient. The following is the data entry screen used to generate the bill at the time of discharging the patient :		
			

Object Type	Object Name	Description
Form	FrmBill	The main form
Text Box	TxtPname	To enter patient name
	TxtAdDate	To enter admission date
	TxtDiDate	To display discharge date as the system date
	TxtDays	To display number of days spent in hospital
	TxtCharge	To enter the daily charges
	TxtAmt	To display the final bill amount
Option Buttons	OptOPD	To select patient type of OPD
	OptICU	To Select patient type as ICU
	OptPrivate	To select patient type as Private
	OptDorm	To select patient type as Dormitory
Command Button	CmdClear	To clear all textboxes
	CmdCalc	To calculate bill amount
	CmdExit	To Exit from the application

(a) Write the code for the CmdClear command button to clear all the textboxes except the txtDiDate textbox. 1

Ans:

```
TxtPname.Text = "  "
TxtAdDate.Text= "  "
TxtDays.Text = " "
TxtCharge.Text = " "
TxtAmt.Text = " "
```

OR

```
TxtPname.Text = VbEmpty
TxtAdDate.Text= VbEmpty
TxtDays.Text = VbEmpty
TxtCharge.Text = VbEmpty
TxtAmt.Text = VbEmpty
```

(1 Mark for clearing any 2 textboxes)
Note: .Text is optional

(b) Write the code for the form load event of FrmBill so as to: 2
(i) Display the system date in the TxtDiDate textbox.
(ii) Disable the TxtDiDate and the TxtDays textboxes.

Ans:

```
(i)   TxtDiDate.text = Date    OR TxtDiDate.text =Date()
      OR
      TxtDiDate.text = NOW    OR TxtDiDate.text =NOW()
(ii)  TxtDiDate.ENABLED = FALSE
      TxtDays.ENABLED = FALSE
```

(1 Mark for each correct answer)

(c) Write the code for the change event of the TxtAdDate textbox to display the number of days the patient has spent in the hospital. The number of days should be calculated as discharge date – admission date. The code should also display a warning message the admission date is input as a date later than the discharge date. 3

Ans:

```
DIM DAYS AS INTEGER
```

```
        Print term
        S1 = S2
        S2 = term
Next Value
End Sub
```

Ans:

```
Sub Fibo (S1 As Integer, S2 As Integer, N As Integer)
Dim count As Integer , term As Integer
Print S1
Print S2
For count = 3 TO  N
        term = S1 + S2
        Print term
        S1 = S2
        S2 = term
Next count
End Sub
```

OR Next

(1/2 Mark for identifying and correcting each error)
(1 Mark for ONLY identifying all errors)

(b) Rewrite the following code using Select Case construct without affecting the output: 2

```
Dim a As Integer
a = 4
If a = 1 Then

          Print "Sunday"

Elself a>=2 and a<=6 Then

          Print "WeekDay"

ElseIf a = 7 Then

          Print "Nearing Weekend"

End If
```

Ans

```
Dim a as Integer
a=4
SELECT CASE a
  CASE 1
        Print "Sunday"
  CASE 2 TO 6 OR CASE IS >=2 AND IS <=6
        Print "WeekDay"
  CASE 7
        Print "Nearing Weekend"
END SELECT
```

(½ Mark for each case)
(½ Mark for select case)

(c) Find the output of the following code: 2

```
Dim a as String
Dim I as Integer
a = "RANK"
I = Len(a)
```

```
Do
  Print Mid (a, I)
 I = I - 1
Loop While I > 0
```

Ans:

```
K
NK
ANK
KANK
```

(1/2 Mark for each correct line of output)

(d) Write a Visual basic function that takes two String arguments and compares the two strings. The function return 0 if both the arguments are equal. The function returns – 1 if the first argument is smaller than the second and 1 if the second argument is smaller then first. **4**

Ans:

```
Public Function strcmp(Str1 As String, Str2 As String) As Integer
```

OR

```
Private Function strcmp(Byval Str1 As String, Byval Str2 As String) As Integer
```

```
 If Str1 < Str2 Then
   strcmp = -1
 ElseIf Str1 = Str2 Then
   strcmp = 0
 Else
   strcmp = 1
 End If
End Function
```

(½ Mark for function header (Name and arguments))
(½ Mark for return type of the function)
(1 Mark for each condition)
NOTE : Any other equivalent logic must be accepted

Section – C

Q6. Read the questions given below and answer accordingly :

a) Write the output produced by the following PL/SQL code: **2**

```
DECLARE
      A NUMBER;
      B NUMBER;
      TEMP NUMBER
BEGIN
      FOR X IN 1..4 LOOP
            TEMP : = A;
            A : = B;
            B : = TEMP;
            A : = A + 1;
            B : = B - 1;
            DBMS_OUTPUT. PUT_LINE ('A =' || A);
            DBMS_OUTPUT.PUT_LINE ('B =' || B);
      END LOOP;
END;
```

	(2 Marks for attempting or identifying that variables have not been initialized) ***(2 Marks to be awarded if either Q6.(b) or (c) or (d) is answered correctly)***	

b)	Find the errors form the following PL/SQL code and rewrite the corrected code underlining the correction made.
	
	`DECLARATION`
	`  V_MNO MOVIES. MOVIENO%TYPE;`
	`  V_TITLE MOVIES.TITLE%TYPE;`
	`  V_PRICE MOVIES.PRICE%TYPE;`
	
	`BEGIN`
	`  V_MNO EQUALS 101`
	`  LOOP`
	`  SELECT TITLE, PRICE, RATING INTO V_TITLE, V_PRICE, V_RATE`
	`  FROM MOVIES`
	`  WHERE MOVIENO = V_MNO;`
	
	`  DBMS_OUTPUT.PUTTEXT(V_TITLE||' '||V_PRICE);`
	`  EXIT WHEN V_RATE<4;`
	`  V_MNO: = V_MNO + 1;`
	
	`  LOOP END;`
	
	`END;`
		2

Ans:	`DECLARE`
	`  V_MNO MOVIES. MOVIENO%TYPE;`
	`  V_TITLE MOVIES.TITLE%TYPE;`
	`  V_PRICE MOVIES.PRICE%TYPE;`
	`  V_RATE MOVIES.RATING%TYPE;`
	
	`BEGIN`
	`  V_MNO := 101;` OR DEFAULT CAN BE USED
	`  LOOP`
	`  SELECT TITLE, PRICE, RATING INTO V_TITLE, V_PRICE, V_RATE`
	`  FROM MOVIES`
	`  WHERE MOVIENO = V_MNO;`
	
	`  DBMS_OUTPUT.PUT_LINE(V_TITLE||' '||V_PRICE);`
	`  EXIT WHEN V_RATE<4;`
	`  V_MNO: = V_MNO + 1;`
	
	`  END LOOP;`
	
	`END;`	

	(½ Mark each for identifying and correcting any 4 errors) ***(1 Mark for ONLY identifying any 4 errors)***	
c)	Differentiate between the OUT and IN OUT modes of a parameter in a PL/SQL block	2
Ans:	1. OUT mode is used to send formal argument value to the actual argument in the	

calling environment/block.
2. IN OUT mode is used to receive and send formal argument value to the actual argument in the calling environment/block.

(2 Marks for correct difference)
OR
(2 Marks for correct explanation of difference with the help of example)

d) Write a PL/SQL Function CheckDiv that takes two numbers as arguments and returns that value 1 if the first argument passed to it is divisible by the second argument else it should return the value 0. 4

Ans:

```
CREATE OR REPLACE FUNCTION CheckDiv ( Num1 NUMBER, Num2 NUMBER) RETURN
NUMBER
AS/IS
  BEGIN

  IF  MOD(Num1,Num2)=0 THEN
    RETURN 1;
  ELSE
    RETURN 0;
  END IF;
END;
```

OR
Any other equivalent code

(1 Mark for Function header)
(1 Mark for IF)
(1 Mark for MOD)
(1 Mark for Returning value)

Q7. Answer the questions based on the table Apartment given below:

Table: Apartment

Column Name	Data Type	Size	Constraint	Description
A_No	NUMBER	4	PRIMARY KEY	Apartment number
A_Cat	CHAR	1	'D' or 'S'	Apartment category as Delux or SuperDelux
Pur_Name	VARCHAR2	30		Name of the purchaser
A_Cost	NUMBER	8,2		Cost of apartment
Dt_Sold	DATE			Date of Selling

(a) Write the SQL command to create table Apartment including the constraints. 2

Ans:

```
CREATE TABLE APARTMENT
(
  A_No  NUMBER(2)        PRIMARY KEY,  OR NOT NULL UNIQUE,
  A_Cat CHAR CHECK(A_Cat='D' OR A_Cat= 'S'),OR CHECK(A_Cat IN('D','S')),
  Pur_Name  VARCHAR2(30),
  A_Cost    NUMBER(8, 2),
  Dt_Sold   DATE
);
```

		(½ Mark for CREATE TABLE) *(½ Mark for fields with data types)* *(½ Mark for PRIMARY KEY constraint)* *(½ Mark for CHECK constraint)*	
	(b)	Write the SQL command to display the category and number of apartments in each category.	2

	Ans:	`SELECT A_Cat, COUNT (*)` `OR COUNT(A_CAT)`
		`FROM Apartment`
		`GROUP BY A_Cat;`	

		(1 Mark for grouping) *(1 Mark for projection)*	
	(c)	Write the PL/SQL code to increase the apartment cost by 5% for an apartment number accepted as parameter and display the update details.	3

	Ans:	`CREATE OR REPLACE PROCEDURE INC_COST(Apno IN NUMBER)`
		`IS/AS`
		`Cost Apartment.A_Cost%TYPE;`
		`BEGIN`
		`UPDATE Apartment`
		`SET A_Cost = A_Cost + 0.05*A_Cost`
		`where A_No = Apno;`
		`Select A_Cost INTO Cost from Apartment`
		`Where A_No = Apno;`
		`DBMS_OUTPUT.PUT_LINE( Apno|| ' '|| Cost);`
		`END;`	

		(1 Mark for Header) *(1 Mark for Update)* *(1 Mark for Display)* ***Any other equivalent code must be accepted***	
	(d)	Write the PL/SQL code to create a stored procedure NOTSOLD to display the details of all the apartments which have not been sold. The code should also display the total cost of all such apartment.	4

	Ans:	`CREATE OR REPLACE PROCEDURE NOTSOLD()`
		`IS/AS`
		`CURSOR C1 IS`
		`SELECT * FROM Apartment`
		`WHERE Dt_Sold IS NULL;` `OR WHERE Pur_Name IS NULL`
		`REC C1%ROWTYPE;`
		`Tcost Number(10,2) :=0;`
		`BEGIN`
		`OPEN C1;`
		`LOOP`
		`FETCH C1 INTO Rec;`
		`EXIT WHEN C1%NOTFOUND;`
		`Tcost :=Tcost+ Rec.A_Cost;`	

		DBMS_OUTPUT.PUT_LINE(Rec. A_No ||' '|| Rec.A_Cat ||' '||Rec.A_Cost); END LOOP; CLOSE C1; DBMS_OUTPUT.PUT_LINE(Tcost); END;	
		(1/2 Mark for procedure header) *(1 Mark for Cursor Declaration)* *(2 Marks for Cursor Processing Loop)* *(1/2 Mark for displaying total cost)* *NOTE : Any other form of Loop for processing cursor must be accepted*	