Informatics Practices (065)
Sample Question Paper –1

Note

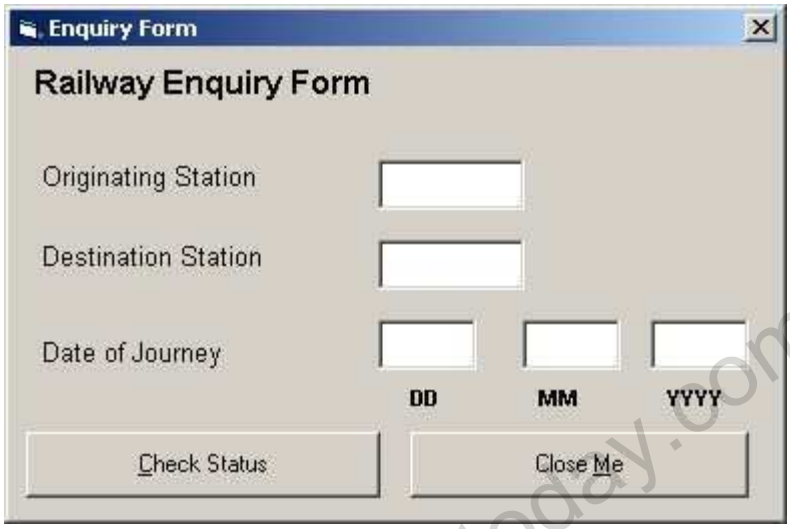
1. This question paper is divided into sections
2. Section – A consists 30 marks.
3. Section – B and Section – C are of 20 marks each
4. Answer the questions after carefully reading the text.

Section – A			
Q 1.	Answer the following questions		
	(a)	Explain the following terms: i. Shareware ii. PHP	2
	(b)	Write the essential components of SDLC using a sample case study.	4
	(c)	Explain the term Data Modeling. What does UML mean? Give the name of two commercially available packages supporting Object Modeling Technique.	4
Q2	Answer the following questions		
	(a)	Write names of any two popular Relational Database Management Systems.	2
	(b)	Define SQL. Explain SQL subcategories giving at least one example command in each category.	4
	(c)	Differentiate between Decision Control and Looping Control Structure in context with PL/SQL	4
Q3	Answer the following questions		
	(a)	What is an Event? Name an Event Driven programming language.	2
	(b)	Differentiate using a suitable example, between MsgBox () and InputBox () functions in Visual Basic	4
	(c)	Differentiate between a ADODB project reference and ADO DC in a form using suitable Example	4

Section – B

Q4 Read the following case study and answer the questions that follows

Mr Nath of Quick Solution Software Corporation has got requirement of a Software Project from a Customer in Tours and Travel Business. He performed the preliminary analysis and found that software Application should be based on Client/Server technology. He opted for Visual Basic Language to develop the front end. Given below is one of the forms to enquire about railway reservation. Carefully observe the following picture.



The List for the above form is as follows:

Object Type	Object Name	Description
Form	frmEnquiryForm	The Main Form Object
Label	lblOriginatingStation	
	lblDestinationStation	
	lblDateOfJourney	
	LblDD	
	LblMM	
	lblYYYY	
Text Box	txtOriginatingStation	To enter a string type value
	txtDestinationStation	To enter a string type value
	TxtDD	To enter a Date
	txtMM	To enter a numeric value of month
	txtYYYY	To enter a numeric value of Year
Command Button	cmdCheckStatus	To check Status of Ticket Availability
	cmdCloseMe	To close the form frmEnquiryForm

	(a)	Write the value for the Caption property of the Object cmdCheckStatus.	1
	(b)	Write the code snippet for cmdCloseMe Command Button if it is required to close the form on its Click event.	1
	(c)	Write a code snippet to allow the user to restrict alphabets in the DD field.	4
	(d)	Write a procedure to check for the validity of the entered date value. Clear the text boxes for invalid date value and set the focus on txtDD.	4

Q5			
	(a)	Find the output of the following when the command button with caption command1 is clicked:	2
		DIM X as integer **PRIVATE SUB command1_click()** **PRINT "Hello"** **CALL First(45)** **PRINT "Bye"** **END SUB** **PRIVATE SUB First(Num as Integer)** **X = 10** **PRINT X** **PRINT Num*X** **End sub**	
	(b)	Rewrite the following code using SELECT.. CASE without effecting the output of the code:	2

		DIM Total as INTEGER
		Total = VAL(text1.text)
		IF Total >= 75 THEN
		Grade = "A"
		ELESEIF Total >=50 THEN
		Grade = "B"
		ELSEIF Total >= 33 THEN
		Grade = "C"
		Else
		Grade = "D"
		End if	

	(c)	Rewrite the corrected code after removing syntax errors from the following VB Code:	2
		DIMENSION Total AS INT **Total=30.0** **DO WHILE Total>=20** **Total=Total-5** **End Do** **PRINT Total**	
	(d)	Rewrite the following code using FOR..NEXT without effecting the output:	2
		Dim Num As Integer **Num = 1** **DO WHILE Num <= 5** **Num = Num + 1** **PRINT num ;** **LOOP**	
	(e)	Write the output that the following code segment	2
		Msg = "Technology" **PRINT MID(LTRIM(Msg),1,4)+ " and " +" Kids"** **PRINT (3 > 8 * 2) AND (3 ^ 2 < 10)** **PRINT VAL("100 Ways") + LEN(Msg)** **PRINT INSTR(Msg,"log")**	

<table>
<tr><td colspan="3">Section C</td><td></td></tr>
<tr><td>6</td><td colspan="3">Answer the questions (with respect to SQL and PL/SQL)</td></tr>
<tr><td></td><td>(a)</td><td>Write a SQL (DDL) query to create the following table Employee

<table>
<tr><th>Column Name</th><th>Data Type</th><th>Size</th><th>Constraint</th><th>Descriptiom</th></tr>
<tr><td>EmpID</td><td>NUMBER</td><td>6</td><td>PRIMARY KEY</td><td></td></tr>
<tr><td>EmpName</td><td>VARCHAR2</td><td>20</td><td>NOT NULL</td><td></td></tr>
<tr><td>EmpAddress</td><td>VARCHAR2</td><td>30</td><td></td><td></td></tr>
<tr><td>EmpPhone</td><td>VARCHAR2</td><td>10</td><td></td><td></td></tr>
<tr><td>EmpSal</td><td>NUMBER</td><td>9,2</td><td></td><td></td></tr>
</table></td><td>2</td></tr>
<tr><td></td><td>(b)</td><td>Write PL / SQL Code to increase the salary of all the employees by some percentage amount accepted from the user</td><td>4</td></tr>
<tr><td></td><td>(c)</td><td>Write program code to declare and use an Explicit Cursor to display the Salary increased by 10%</td><td>4</td></tr>
</table>

7 Assume that you are provided with the following two table

Table: Dept

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Table: Emp

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-Dec-80	800		20
7499	ALLEN	SALESMAN	7698	20-Feb-81	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-81	1250	500	30
7566	JONES	MANAGER	7839	02-Apr-81	2975		20
7654	MARTIN	SALESMAN	7698	28-Sep-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-May-81	2850		30
7782	CLARK	MANAGER	7839	09-Jun-81	2450		10
7788	SCOTT	ANALYST	7566	09-Dec-82	3000		20
7839	KING	PRESIDENT		17-Nov-81	5000		10
7844	TURNER	SALESMAN	7698	08-Sep-81	1500	0	30
7876	ADAMS	CLERK	7788	12-Jan-83	1100		20
7900	JAMES	CLERK	7698	03-Dec-81	950		30
7902	FORD	ANALYST	7566	03-Dec-81	3000		20
7934	MILLER	CLERK	7782	23-Jan-82	1300		10

The table structure are

Table: Dept

Colum Name	Data Type	Size	Constraint	Description
DeptNo	Number	2	PRIMARY KEY	
Dname	VARCHAR2	10	NOT NULL	
Loc	VARCHAR2	10		

Table: Emp

Colum Name	Data Type	Size	Constraint	Description
EmpNo	Number	4	PRIMARY KEY	
Ename	VARCHAR2	10	NOT NULL	
JOB	VARCHAR2	10		
MGR	NUMBER	4		
HIREDATE	DATE			
SAL	NUMBER	(7,2)		
COMM	NUMBER	(7,2)		
DEPTNO	NUMBER	2	FOREIGN KEY	References DeptNo field of Dept Table

	(a)	Create a View on the above tables to show Ename, Dname, Job and Sal of an employee whose department number is either 10 or 20.	2
	(b)	Write a SQL Function to return Bonus, which is calculated as 20% of the amount passed. Also give an example of its use on column Sal of Emp table.	4
	(c)	Write the PL/SQL code to create a stored procedure Raise_Salary to increase salary of an employee whose EMPNO and Sal_Percentage is passed as IN mode argument and will also display the changed value.	4

Informatics Practices (065)
Answering Scheme - Sample Question Paper 1

Note

5. This question paper is divided into sections
6. Section – A consists of 30 marks.
7. Section – B and Section – C are of 20 marks each
8. Answer the questions after carefully reading the text.

SECTION – A

Q 1. Answer the following questions

(a) Explain the following terms: 2

iii. Shareware
iv. PHP

Answer
i. **Shareware:** A method of marketing software where a program is distributed freely, and users may try it before paying for it.
ii. **PHP:** Hypertext Preprocessor (or Personal Home Page) is an open source server side programming language used to create dynamic Web content.

(1 mark for each correct explanation)

(b) Write the essential components of SDLC using a sample case study. 4

Answer
SDLC is an abbreviation for Software Development Life Cycle. The essential components of SDLC are Analysis, Design, Develop, Test and Implement.
Sample Case Study:
A Restaurant owner approached a software company for the automation of his daily operations and account keeping. The software Company performs the requirement **Analysis** and prepares an initial **Design** document for the proposed solution. After approval of the restaurant owner the Software company proceeds towards **Development** of the application. After completion of the **Development** processes the software company performs **testing** with dummy data and also with Client's original data. On the completion of testing process the software is **Implemented** at the client end (Client end is the Restaurant Owner.

(½mark each for naming any 4 components correctly)
(2 marks for the sample case study)

(c) Explain the term Data Modeling. What does UML mean? Give the name of two commercially available packages supporting Object Modeling Technique. 4

Answer
Data Modeling is the technique to model or design the client concept (The person who wants the software to be made) by applying formal data model descriptions using data modelling techniques. It is a graphical method, which facilitates easy conversion of client view or user view of the data into tables in the database.
UML means Unified Modeling Language.
The two commercially available packages are Rational Rose and Visio

(2 marks for correct explanation of the term Data Modeling)
(1 mark for the correct meaning of UML)
(½mark each for correctly naming any two packages)

Q2 Answer the following questions

(a) Write names of any two popular Relational Database Management Systems. 2

Answer ORACLE

Microsoft SQL or MySQL
Microsoft Access
Firebird
DB2
Sybase

(1mark each for naming any two correct RDBMS)

(b) Define SQL. Explain SQL subcategories giving at least one example command in each category. 4

Answer SQL is the Structured Query Language used to interact with the RDBMS.
The SQL Subcategories are:
DML (INSERT, UPDATE, DELETE)
DDL (CREATE TABLE, DROP TABLE, ALTER TABLE)
DCL (GRANT, REVOKE)
TCL (COMMIT, ROLLBACK)

(1mark for the correct definition of SQL)
(½mark each for correctly naming any 3 subcategori es)
(½mark each for the correct command in each catego ry (Only one command in each category))

(c) Differentiate between Decision Control and Looping Control Structure in context with PL/SQL 4

Answer

Decision Control	Looping Control
1. Decision control structures are used to implement decisions based on conditions. We check the condition and allow to execute code if the condition is found true else some other set of code is executed. This can be achieved using If then Else End if command in PL/SQL. We can also nest multiple IFs together.	1. Looping means iterations or repetition of some set of code. The same set of code can be executed more than once on entering into the Looping Construct.

2. The syntax is:
If <Condition> Then
<Executable Statements>
Else
<Executable Statements>
End If
	2. Looping Control in PL/SQL are
	basic LOOP
	FOR Loop
	WHILE Loop

3. In decision control, statement(s) is/are executed maximum one time only whereas in loops statement(s) is/are executed more than one time	

(2 marks for any two correct differences)

Q3 Answer the following questions

(a) What is an Event? Name an Event Driven programming language. 2

Answer An event represents the state of the keyboard keys, the location of the mouse, and the state of the mouse buttons, which occurs as the result of user interaction with an element.
For example, when a user clicks a button, an event is generated.
Visual Basic is one example of an event driven programming language.

(1 mark for the correct definition)
(1 mark for naming the language)

(b) Differentiate using a suitable example, between MsgBox () and InputBox () functions in Visual Basic 4

Answer

MsgBox ()	InputBox ()
1. As the name explains it's a mechanism to show a small dialog box, which pops up over the existing application for displaying custom messages.	1. The InputBox is for displaying a message along with collecting User Inputs.
2. Message Box can also be used to gather user responses but they are limited to the user actions such as whether the user has Clicked OK button, or Cancel Button or Yes button or No button etc.	2. The Input Box gathers user data in string form.
Example MsgBox "Hello User"	Example Dim Age Age=InputBox ("Enter Age")

(2 marks for any two correct differences)
(1 mark for each example)

(c) Differentiate between a ADODB project reference and ADO DC in a form using suitable Example 4

Answer

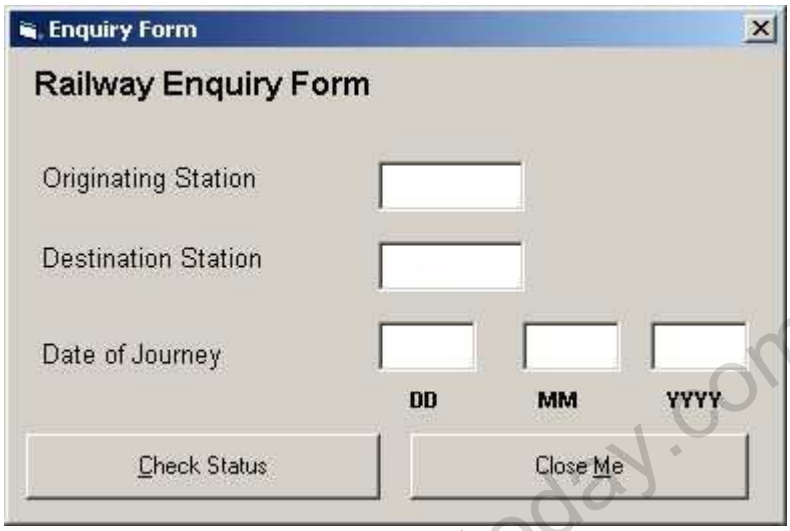
ADODB	ADO DC
It is an object library available in visual basic and a reference can be added by going to the menu Project > References.	It is a data control like other controls available in the toolbox. This control can be added by going to the Menu Project > Components.
ADODC is class library.	ADODC is just a data control,
Ex: Programmer Controlled Navigation of Data from table	Ex:This control does pre-defined navigations MoveFirst,MoveLast,MoveNext, MovePrevious

(2 marks for any two correct differences)
(1 mark for each example)

Section – B

Q4 Read the following case study and answer the questions that follows:

Mr Nath of Quick Solution Software Corporation has got requirement of a Software Project from a Customer in Tours and Travel Business. He performed the preliminary analysis and found that software Application should be based on Client/Server technology. He opted for Visual Basic Language to develop the front end. Given below is one of the forms to enquire about railway reservation. Carefully observe the following picture.



The List for the above form is as follows:

Object Type	Object Name	Description
Form	frmEnquiryForm	The Main Form Object
Label	lblOriginatingStation	
	lblDestinationStation	
	lblDateOfJourney	
	LblDD	
	LblMM	
	lblYYYY	
Text Box	txtOriginatingStation	To enter a string type value
	txtDestinationStation	To enter a string type value
	txtDD	To enter a Date
	txtMM	To enter a numeric value of month
	txtYYYY	To enter a numeric value of Year
Command Button	cmdCheckStatus	To check Status of Ticket Availability
	cmdCloseMe	To close the form frmEnquiryForm

(a) Write the value for the Caption property of the Object cmdCheckStatus. 1

Answer	&Check Status ***(½mark for '&' symbol)*** ***(½mark for the text 'Check Status')***	

(b) Write the code snippet for cmdCloseMe Command Button if it is required to close the form on its Click event. 1

Answer	On Click event of the cmdCloseMe button write the following: END ***(½mark for mentioning the event or writing the eq uivalent code for it)*** ***(½mark for the code)***	

(c) Write a code snippet to allow the user to restrict alphabets in the DD field. 4

Answer	On KeyPress Event write the following code fragment:
	
	If (KeyAscii >= 65 And KeyAscii <= 90) Or (KeyAscii >= 97 And KeyAscii <= 122) Then
	MsgBox "Please Enter Numeric Values Only"
	KeyAscii = 0
	End If
	
	(2 marks for the correct validation using the IF statement)
	(1 mark for displaying a message using the MsgBox)
	(½mark for reinitializing the value)
	(½mark for End If)	

(d) Write a procedure to check for the validity of the entered date value. Clear the text boxes for invalid date value and set the focus on txtDD. 4

Answer	<u>Procedure Coding:</u>
	Dim strDate as String
	
	strDate = trim(txtDD.Text) & "-" & trim (txtMM.text) &"-"& trim(txtYYYY.text)
	
	If Not IsDate(strDate) Then
	MsgBox "Please Enter a Valid Date"
	txtDD.Text = ""
	txtMM.Text=""
	txtYYYY.text=""
	txtDD.SetFocus
	End If
	
	(1 mark for extracting the value from the textbox)
	(1 mark for the correct validation using the IF statement)
	(1 mark for displaying a message using the MsgBox)
	(1 mark for clearing the textboxes)	

Q5 Read the following case study and answer the questions that follows

(a) Find the output of the following when the command button with caption command1 is clicked: 2

```
DIM X as integer
PRIVATE SUB command1_click()
  PRINT "Hello"
  CALL First(45)
  PRINT "Bye"
END SUB

PRIVATE SUB First(Num as Integer)
  X = 10
  PRINT X
  PRINT Num*X
END SUB
```

Answer	Hello 10 450 ***(½mark for each correct line of output)*** Bye	

(b) Rewrite the following code using SELECT.. CASE without effecting the output of the code: 2

```
DIM Total as INTEGER
Total = VAL(text1.text)
IF Total  >= 75 THEN
  Grade = "A"
ELESEIF Total >=50 THEN
  Grade = "B"
ELSEIF Total  >= 33 THEN
  Grade = "C"
ELSE
  Grade = "D"
END IF
```

Answer	`SELECT CASE Total`
	`CASE IS>=75`
	`    Grade = "A"`
	`CASE 50 TO 74`
	`      Grade = "B"`
	`CASE 33 TO 49`
	`      Grade = "C"`
	`CASE ELSE`
	`      Grade = "D"`
	`END SELECT`
	
	(½ mark for SELECT statement)
	(½ mark for case value)
	(½ mark for CASE ELSE statement)
	(½ mark for END SELECT statement)	

(c) Rewrite the corrected code after removing syntax errors from the following VB Code: 2

```
DIMENSION Total AS INT
  Total=30.0
  DO WHILE Total>=20
    Total=Total-5
  End Do
PRINT Total
```

Answer

Corrected code:

```
DIM Total AS INTEGER
  Total=30.0
  DO WHILE Total>=20
    Total=Total-5
  LOOP
  PRINT Total
```

(1 mark for identifying the three errors)
(1 mark for writing the corrected code)

(d) Rewrite the following code using FOR..NEXT without effecting the output: 2

```
Dim Num As Integer
Num = 1
DO WHILE Num <= 5
  Num = Num + 1
  PRINT num ;
LOOP
```

Answer

```
FOR Num = 1 TO 5
  PRINT Num
NEXT Num
```

(½mark for using correct control variable)
(½mark for using correct initial value)
(½mark for using correct final value)
(½mark for NEXT statement)

(e) Write the output of the following code segment: 2

```
Msg = "Technology"
PRINT MID(LTRIM(Msg),1,4)+ " and " +" Kids"
PRINT (3 > 8 * 2) AND (3 ^ 2 < 10)
PRINT VAL("100 Ways") + LEN(Msg)
PRINT INSTR(Msg,"log")
```

Answer

Output:

```
Tech and Kids
False
110
7
```

(½mark for each correct line of output)

Section C

6 Answer the questions (with respect to SQL and PL/SQL)

(a) Write a SQL (DDL) query to create the following table Employee 2

Column Name	Data Type	Size	Constraint	Descriptiom
EmpID	NUMBER	6	PRIMARY KEY	
EmpName	VARCHAR2	20	NOT NULL	
EmpAddress	VARCHAR2	30		
EmpPhone	VARCHAR2	10		
EmpSal	NUMBER	9,2		

Answer

Code:

```
CREATE TABLE Employee (
        EmpID       NUMBER (6)          PRIMARY KEY,
        EmpName     VARCHAR2 (20)       NOT NULL,
        EmpAddress  VARCHAR2 (30),
        EmpPhone    VARCHAR2 (10),
        EmpSal      NUMBER (9,2));
```

(½mark for CREATE TABLE)
(½mark for fields with data types)
(½mark for PRIMARY KEY constraint)
(½mark for NOT NULL constraint)

(b) Write PL / SQL Code to increase the salary of all the employees by some percentage amount accepted from the user 4

Answer

Code:

```
BEGIN
   UPDATE EMPLOYEE;
   SET EmpSal = EmpSal+EmpSal * &SAL_PER/100;
END;
```

(1mark for UPDATE Employee statement)
(1 mark for correct SET statement)
(2 marks for using the correct expression to increase salary)

(c) Write program code to declare and use an Explicit Cursor to display the Salary increased by 10%. 4

Answer	Code:
	DECLARE
	V_Sal EMP.SAL%TYPE;
	CURSOR C_Emp IS SELECT SAL FROM EMP;
	BEGIN
	OPEN C_Emp;
	LOOP
	FETCH C_Emp INTO V_Sal;
	V_Sal := V_Sal * 1.1;
	EXIT WHEN C_Emp%NOTFOUND;
	DBMS_OUTPUT.PUT_LINE (' Raised Salary is: ' || V_Sal);
	END LOOP;
	CLOSE C_Emp;
	END;
	
	(1 mark for creating the Cursor)
	(1 mark for the loop)
	(1 mark for using DBMS_OUTPUT.PUT_LINE)
	(1 mark for correct expression for increase of Salary)	

7 Assume that you are provided with the following two tables:

Table: Dept

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Table: Emp

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-Dec-80	800		20
7499	ALLEN	SALESMAN	7698	20-Feb-81	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-81	1250	500	30
7566	JONES	MANAGER	7839	02-Apr-81	2975		20
7654	MARTIN	SALESMAN	7698	28-Sep-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-May-81	2850		30
7782	CLARK	MANAGER	7839	09-Jun-81	2450		10
7788	SCOTT	ANALYST	7566	09-Dec-82	3000		20
7839	KING	PRESIDENT		17-Nov-81	5000		10
7844	TURNER	SALESMAN	7698	08-Sep-81	1500	0	30
7876	ADAMS	CLERK	7788	12-Jan-83	1100		20
7900	JAMES	CLERK	7698	03-Dec-81	950		30
7902	FORD	ANALYST	7566	03-Dec-81	3000		20
7934	MILLER	CLERK	7782	23-Jan-82	1300		10

The table structures as

Table: Dept

Colum Name	Data Type	Size	Constraint	Description
DeptNo	Number	2	PRIMARY KEY	
Dname	VARCHAR2	10	NOT NULL	
Loc	VARCHAR2	10		

Table: Emp

Colum Name	Data Type	Size	Constraint	Description
EmpNo	Number	4	PRIMARY KEY	
Ename	VARCHAR2	10	NOT NULL	
JOB	VARCHAR2	10		
MGR	NUMBER	4		
HIREDATE	DATE			
SAL	NUMBER	(7,2)		
COMM	NUMBER	(7,2)		
DEPTNO	NUMBER	2	FOREIGN KEY	References DeptNo field of Dept Table

(a) Create a View on the above tables to show Ename, Dname, Job and Sal of an employee whose department number is either 10 or 20. 2

Answer

Code:

```
CREATE VIEW VU_EMP AS   SELECT EName, Dname, Job , Sal
                        FROM Emp, Dept
                        WHERE Emp.DeptNo = Dept.DeptNo
                        AND  Emp.DeptNo IN (10,20);
```

(½Mark for CREATE VIEW command)
(½ Mark for SELECT statement)
(1 Mark for WHERE clause)

(b) Write a SQL Function to return Bonus, which is calculated as 20% of the amount passed. Also give an example of its use on column Sal of Emp table. 4

Answer

Code:

```
CREATE OR REPLACE FUNCTION FindBonus (V_Amount IN NUMBER)
RETURN NUMBER AS
V_Bonus NUMBER;
BEGIN
    V_Bonus := V_Amount * 1.2;
    RETURN V_Bonus;
END;
```

Example of use:

```
SQL> SELECT Ename, FindBonus(Sal) FROM Emp;
```

(1 mark for correct function header)
(½ mark for correct positions of BEGIN and END)
(1 mark for correct calculation expression)
(½ mark for RETURN)
(1 mark for Example)

(c) Write the PL/SQL code to create a stored procedure Raise_Salary to increase salary of an employee whose EMPNO and Sal_Percentage is passed as IN mode argument and will also display the changed value. 4

Answer

Code:

```
CREATE OR REPLACE PROCEDURE RAISE_SALARY
(V_EmpNo EMP.EMPNO%TYPE, SAL_PERCENTAGE NUMBER)
 AS
  V_SAL NUMBER (10,2);
 BEGIN
    UPDATE EMP
        SET SAL= SAL+(SAL*(SAL_PER/100))
        WHERE EMPNO = V_EMPNO;
    SELECT SAL INTO V_SAL
    FROM EMP
    WHERE EMPNO = V_EMPNO;
    DBMS_OUTPUT.PUT_LINE ('The New Salary is : ' || V_SAL);
 END;
```

(1 mark for correct Procedure header with required parameters)
(1 mark for correct UPDATE statement)
(1 mark for correct SELECT statement)
(1 mark for displaying the changed value of salary)