ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION **WINTER SEMESTER, 2012-2013**
DURATION: 1 Hour 30 Minutes **FULL MARKS: 75**

CSE 4507: RDBMS Programming

Programmable calculators are not allowed. Do not write anything on the question paper.
There are **4 (four)** questions. Answer any **3 (three)** of them.
Figures in the right margin indicate marks.

---

1. a) Explain the tasks of the following attributes in Oracle: 6
    i. %ISOPEN iii. %TYPE
    ii. %ROWCOUNT iv. %ROWTYPE

    b) In PL/SQL, is it possible for a procedure to return value? If your answer is yes, provide an example illustrating how this can be done. 6

    c) Consider the following **Accounts** table given in table 1. Suppose that, the table contains 1000 records. Your task is to write a PL/SQL code that will check whether this table contains any duplicate record or not. Print the number of duplicate records if any. 8

Table 1: Accounts

Account_ID	Customer_ID	Current_Balance
A001	C001	1500
A002	C002	1100
A001	C001	1500
…	…	…

    d) Consider the Accounts table in question 1.c). Suppose that, the table contains some records. Now write a PL/SQL block that will show the last 5 records of this table in output. 5

2. a) Differentiate between the different parameter modes available in PL/SQL 6

    b) If a code segment takes 130-seconds to be executed in interpreted mode, how much time it will take for the same code segment to be executed in native compilation? Explain your answer. 6

    c) Consider the **Employee** and **Category** tables in table 2 and 3 respectively. In the **Employee** table, Appoint_Date is the date when the employee started his work in the company and Category is a foreign key column that references the Category_ID column of the **Category** table. In the **Category** table, the C_Basic column corresponds to the starting basic salary of the employee of the respective categories and C_Incr value represents the percentage value of the basic salary, which will be added with the basic after each year. For example, for an employee of category C1, the basic salary will become 40000 + (8% of 40000) after one year. 13

    Now, write a series of SQL or PL/SQL to calculate the current basic salary of each of the employee and print them in descending order in the output. Your output should contain two columns, one representing the employee ID and the other showing the current basic salary of the corresponding employee.

Table 2: Employee

E_ID [Varchar2(50)]	E_Name [Varchar2(100)]	Appoint_Date [Date]	Category [Varchar2(50)]
E001	Faisal Ahmed	10-JAN-2002	C1
E002	Emam Hossain	25-DEC-2005	C2
E003	Hossain Bari	05-JAN-2010	C1
…	…	…	…

Table 3: Category

Category_ID [Varchar2(50)]	C_Name [Varchar2(100)]	C_Basic [Number]	C_Incr [Number]
C1	Admin	40000	8
C2	Staff	25000	5
…	…	…	…

3. a) Consider the **Employee** table in table 2. Write a series of SQL or PL/SQL code in order to change the datatype of column Appoint_Date from Date to Varchar2(50). In the new Appoint_Date column, the dates should be formatted as 'YYYY/MM/DD'.   10

   b) Consider the **Employee** table in table 2. Now, examine the following PL/SQL code and Explain the output.   5

```
DECLARE
VAR Employee%ROWTYPE;
BEGIN
SELECT * INTO VAR FROM Employee WHERE Category='C2';
DBMS_OUTPUT.PUT_LINE(VAR.E_ID||'belongs to category'||VAR.Category);
END;
```

   c) Consider the **Accounts_Master** table in table 4, which contains 1000 records. Since one customer can possess multiple accounts, there may be duplicate values in the Customer_ID column. Now, your task is to write a PL/SQL code that will print the number of accounts owned by each of the customers.   10

Table 4: Accounts_Master

Account_ID	Customer_ID	Balance
A001	C001	15000
A002	C002	12000
A003	C001	11000
…	…	…

4. a) Write 4 advantages of PL/SQL over SQL.   4

   b) What is bind variable? Explain the advantage of using bind variable with suitable example.   6

   c) "A cursor is a pointer to records" – explain your standpoint on this comment. Defend your answer with suitable explanation.   5

   d) Write a SQL code to create the **Accounts** table given in table 5. All constraints should be declared in table level with user-defined names. Account_ID and Open_Date together will be the primary key of this table.   10

Table 5: Accounts

Column Name	Data Type	Restrictions (If any)
Account_ID	Varchar2(50)	Not empty, must start with an 'A'
Account_Type	Varchar2(50)	Not empty, only allowed values are 'Savings' and 'Current' (case-insensitive)
Open_Date	Date	Not empty
Balance	Number(10,2)	Not empty, must be a non-negative number
Customer_ID	Varchar2(50)	It is a foreign key column, which has a parent column C_ID in the **Customer** table