Database Concepts

Module 2 : Objective Questions

1. Consider a table emp(name,salary)

   SELECT name FROM emp WHERE salary BETWEEN 1000 AND 2000;

   The above query will display the names from the emp table whose _____

   a) salary is >1000 and salary <= 2000
   b) salary is >=1000 and salary <= 2000
   c) salary is >=1000 and salary < 2000
   d) salary is >1000 and salary < 2000

2. Consider the relation sale (date, customer, product, vendor, vendorcity, salesrep)

   {customer, product} is the composite candidate key and the following functional dependencies are also given

   customer->salesrep
   vendor -> vendorcity
   product -> vendor

   The given relation "sale" is in

   a) 1 NF
   b) 2 NF
   c) 3 NF
   d) BCNF

3. Which of the following aggregate functions can be applied on both number and character typed columns?

   i) MIN
   ii) MAX
   iii) AVG
   iv) COUNT
   v) SUM

   a) i, ii and v
   b) i, ii and iii
   c) i and ii
   d) i, ii and iv

4. Consider the following table scripts.

   CREATE TABLE DEPT

(deptno NUMBER(2) CONSTRAINT PK_DEPT PRIMARY KEY,
dname VARCHAR2(14) ,
loc VARCHAR2(13)) ;

CREATE TABLE EMP
(empno NUMBER(4) CONSTRAINT PK_EMP PRIMARY KEY,
ename VARCHAR2(10),
job VARCHAR2(9),
mgr NUMBER(4),
hiredate DATE,
sal NUMBER(7,2),
comm NUMBER(7,2), deptno NUMBER(2) CONSTRAINT FK_DEPTNO
REFERENCES DEPT);

Display the deptno and total number of employees working in each department in ascending order of deptno.
Which SQL query will generate the required output?

a) SELECT deptno, count(empno) FROM emp GROUP BY deptno;
b) SELECT deptno, count(empno) FROM emp HAVING deptno ORDER BY deptno;
c) SELECT deptno, count(empno) FROM emp GROUP BY deptno ORDER BY deptno;
d) SELECT deptno, count(empno) FROM emp ORDER BY deptno;
e) NOT ANSWERED

5. BETWEEN operator can be replaced by _____.
IN operator can be replaced by _____.

a) AND, AND
b) AND, OR
c) OR, OR
d) OR, AND

6. Which one of the following DDL statements will create a table? Assume table author is already created with appropriate constraints and data types.

a) CREATE TABLE book (bookid NUMBER(4) CONSTRAINT pk_bookid PRIMARY KEY, bookname VARCHAR2(10), authorid NUMBER(4) CONSTRAINT fk_authorid FOREIGN KEY REFERENCES author(authorid));

b) CREATE TABLE book (bookid NUMBER(4) CONSTRAINT pk_bookid PRIMARY KEY, bookname VARCHAR2(10), authorid NUMBER(4) CONSTRAINT fk_authorid REFERENCES author(authorid));

c) CREATE TABLE book (bookid NUMBER(4) CONSTRAINT pk_bookid PRIMARY KEY, bookname VARCHAR2(10), authorid NUMBER(4) fk_authorid REFERENCES

author(authorid));

d) CREATE TABLE book (bookid NUMBER(4) pk_bookid PRIMARY KEY, bookname VARCHAR2(10), authorid NUMBER(4) CONSTRAINT fk_authorid REFERENCES author(authorid));

7. Consider the following table:

   customer (state, city, location)

   During the creation of the table, no constraints were specified for the customer table.

   Which of the following statement will add a composite primary key on columns state and city on the above existing table?
   a) ALTER TABLE customer ADD CONSTRAINT pkcity PRIMARY KEY (state, city);
   b) CREATE CONSTRAINT pkcity PRIMARY KEY ON customer (state, city);
   c) CREATE PRIMARY KEY ON customer (state, city);
   d) NOT ANSWERED

8. Consider the creation of the following table: customer(custid, accountno, custname) with columns (custid, accountno) together should be UNIQUE. Which one of the following options is CORRECT?
   a) This type of constraint is not possible
   b) Put UNIQUE constraint on both the columns separately
   c) Put a table level UNIQUE constraint involving both the columns
   d) Put PRIMARY KEY constraint on both the columns separately

9. Structure of STUDENT table is given below:
   stu_id NOTNULL number(3), name varchar2(25), address varchar2(50), graduation date
   Currently the table is empty. You have decided that NULL values should not be allowed for the NAME column. Which statement restricts NULL values from being entered into column?

   a) ALTER TABLE student MODIFY CONSTRAINT name (NOT NULL);
   b) ALTER TABLE student ADD CONSTRAINT name (NOT NULL);
   c) ALTER TABLE student MODIFY (name varchar2(25) NOT NULL);
   d) ALTER TABLE student ADD CONSTRAINT NOT NULL (name);

10. Which command would you use to remove all the rows from the emp table and not allow rollback (reverse)?
    a) DELETE emp;
    b) There is no way to remove all rows and not allow rollback (reverse)
    c) TRUNCATE TABLE emp;
    d) DROP TABLE emp;

11. Given an employee table as follows\:

empid	name	managerid
a1	bob	NULL
b1	jim	a1
B2	tom	a1

What value will select count(*) from employees return?

a) 0
b) 1
c) 2
d) 3

12. Let E1 and E2 be two entities in an ER diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?
    a) 2
    b) 3
    c) 4
    d) 5

13. Which of the following is true? A view is updatable if
    a) DISTINCT is specified in the query used to create the view
    b) The FROM clause specifies only one source table
    c) The WHERE clause includes a sub query
    d) The query includes a GROUP BY or HAVING clause

14. Select empid, Avg(salary) from Employee group by departmentno will return
    a) empid, salary
    b) departmentno
    c) empid,salary,departmentno
    d) error

15. In a relation R, A,B and C are the attributes. The functional dependencies are as follows AB -> B, AC -> C, C -> B Then what is the highest normal form of R?
    a) 1 NF
    b) 2 NF
    c) 3 NF
    d) BCNF

16. In SQL, how can you delete the records where the "First Name" is "Peter" in the Persons Table?
    a) DELETE FirstName='Peter' FROM Persons
    b) DELETE ROW FirstName='Peter' FROM Persons
    c) DELETE * FROM Persons WHERE FirstName='Peter'
    d) DELETE from Persons

17. Each department offering multiple courses is ---------- type of relationship between the entities department and course
    a) One to Many
    b) One to One
    c) Many to Many
    d) Many to One

18. You want to create report to show different jobs in each department. You do not want to display any duplicate roles in the report. Which SELECT statement do you use to create the report?
    a) SELECT deptno, job FROM emp;
    b) SELECT no duplicate deptno, job FROM emp;
    c) SELECT distinct deptno, job FROM emp;
    d) SELECT distinct deptno, distinct job FROM emp;

19. In which order does the Oracle server evaluate cluses?
    a) HAVING, WHERE, GROUP BY
    b) WHERE, GROUP BY, HAVING
    c) GROUP BY, HAVING, WHERE
    d) WHERE, HAVING, GROUP BY

20. The employee table contains these columns:
    ID Number(9), Last_name varchar2(25), first_name varchar2(25), commission number(7,2)

    You need to display the current commission for all employees. Desired results are :
    1. Display the commission multiplied by 1.5
    2. Exclude employees with ZERO commission
    3. Display a ZERO for employees with null commission value.

    Evaluate this SQL statement:
    SELECT id,last_name,first_name, commission*1.5 FROM employee WHERE commission <>0;

    Which of the desired results does the statement provide?
    a) All the desired results
    b) Two of the desired results
    c) One of the desired results
    d) A syntax error

21. The employee table contains these columns:
    Last_name varchar2(25), first_name varchar2(25), dept_id Number(9)

    You need to display the names of the employees that are not assigned to the department. Evaluate following SQL Statement:

    SELECT last_name, first_name FROM employee WHERE dept_id is NULL;

Which change should you make to achieve the desired result?

a) Create an outer join
b) Change the column in the WHERE condition
c) Change the operator in the WHERE condition
d) Add a second condition to the WHERE condition

22. Look at following STUDENT table structure:

stu_id NOT NULL number(3), name NOT NULL varchar2(25), address varchar2(50), graduation date

Which statement inserts a new row into the STUDENT table?

a) INSERT INTO student VALUES(101, 'Smith');
b) INSERT INTO student VALUES(101, '100 Main Street', '18-OCT-14', 'Smith');
c) INSERT INTO student (stu_id, address, graduation) VALUES(101, 'Smith', '100 Main Street', '18-OCT-14');
d) INSERT INTO student (stu_id, address, name, graduation) VALUES(101, '100 Main Street', 'Smith', '18-OCT-14');

23. Please find below the structure of the STUDENT table:
stu_id NOT NULL number(3), name NOT NULL varchar2(25), address varchar2(50), graduation date

Graduation column is a FOREIGN KEY column to the graduate table. Examine the data in the GRADE DATE table.

Graduation column contains following values in the StuDENT table:
20-JAN-2009
12-MAY-2009
19-JAN-2010
25-MAY-2010
13-JAN-2011
29-MAY-2011

Which update statement produces the following error: ORA-02291 integrity constraint (sys_c23) violated parent key not found?

a) UPDATE student SET stu_id=999, graduation = '29-MAY-2011' WHERE stu_id=101;
b) UPDATE student SET name='Smith', graduation='15-AUG-2010' WHERE stu_id=101;
c) UPDATE student SET name='Smith', graduation='29-MAY-2011' WHERE stu_id=101;

d) UPDATE student SET stu_id=NULL, address='100 Main Street' WHERE graduation='20-JAN-2009';

24. SELECT dept_no, AVG(MONTHS_BETWEEN(SYSDATE, hire-date)) FROM employee WHERE AVG(MONTHS_BETWEEN(SYSDATE, hire_date))>60 GROUP BY dept_no ORDER BY AVG(MONTHS_BETWEEN(SYSDATE, hire_date));

    Why does this statement cause an error?

    a) A SELECT clause cannot contain a group function
    b) A WHERE clause cannot be used to restrict groups.
    c) An ORDER BY clause cannot contain a group function
    d) A GROUP function cannot contain a single row function.

25. The PART table contains following columns:
    id number(7) PRIMARY KEY, cost number(7,2), product_id number(7)

    Evaluate following 2 SQL queries:

    1) SELECT ROUND(MAX(cost),2), ROUND(MIN(cost,2),ROUND (SUM (cost),2), ROUND(AVG(cost),2) FROM part;

    2) SELECT product_id, ROUND(max(cost),2), ROUND(min(cost), 2), ROUND(sum(cost), 2), ROUND (AVG (cost), 2) FROM part GROUP BY product_id;

    How these two queries differ in their results?
    a) The results will be same but the display will differ
    b) The statement 1 will only display one row of results, statement 2 can display more than one.
    c) One of the statements will generate an error
    d) Statement 1 will display a result for each part, statement 2 will display a result for each product.

26. The PRODUCT table contains these columns:
    id number(9) PRIMARY KEY, cost number(7,2), sale_price number(7,2)

    Management has asked you to calculate the net revenue per unit for each product, if the cost of each product is increased by 10% and the sale price of each product is increased by 25%. You are giving following SQL query:

    SELECT id, sale_price*1.25 - cost * 1.10 FROM product;

    Which conclusion can you draw from the results?

    a) Only the required results are displayed
    b) The results provide more information than management requested.

c) A function needs to be included in the SELECT statement to achieve the desired result.
d) The order on the operations in the calculation needs to be changed to achieve the required results.

27. Structure of STUDENT table is given below:
stu_id NOTNULL number(3), name varchar2(25), address varchar2(50), graduation date

Currently the table is empty. You have decided that NULL values should not be allowed for the NAME column. Which statement restricts NULL values from being entered into column?
a) ALTER TABLE student ADD CONSTRAINT name (NOT NULL);
b) ALTER TABLE student ADD CONSTRAINT NOT NULL (name);
c) ALTER TABLE student MODIFY CONSTRAINT name (NOT NULL);
d) ALTER TABLE student MODIFY (name varchar2(25) NOT NULL);

28. Which TWO SQL arithmetic expression return a date?

A. '03-Aug-14' + 7
B. '03-Aug-14' - (12/24)
C. '03-Aug-14' - '10-Aug-14'
D. ('03-Aug-14' - '10-Aug-14') / 7

a) A and B
b) A and C
c) B and D
d) B and C

29. Select _____ from instructor where dept name= 'Comp. Sci.';
Which of the following should be used to find the mean of the salary ?

a) Mean(salary)
b) Avg(salary)
c) Sum(salary)
d) Count(salary)

30. Identify the entity relationship types - An employee can work on more than one project, and a project can have more than one employee assigned. You may choose to create a table with both the Employee Number and the Project Number in the same table
a) One-to-One
b) One-to-Many
c) Many-to-Many
d) Many-to-One

31. Create table course

(. . .
foreign key (dept name) references department
. . .);
Which of the following is used to delete the entries in the referenced table when the tuple is deleted in course table?

a) Delete
b) Delete Cascade
c) Set null
d) All of the above

Module 5 : Objective Questions

1. Consider the following emp table:

   empid salary managerid

   E1 1000 E3
   E2 2000 NULL
   E3 1600 E4
   E4 1700 E2
   E5 1900 NULL

   Which of the following query would display empid and managerid of those employees where both employee and manager are getting salary more than 1500?

   a) SELECT DISTINCT e1.empid, e2.empid FROM emp e1 JOIN emp e2 ON e1.managerid=e2.empid
   AND e1.salary>1500 OR e2.salary>1500;
   b) SELECT DISTINCT e1.empid, e2.empid FROM emp e1 JOIN emp e2 ON e1.managerid=e2.empid AND e1.salary>1500;
   c) SELECT DISTINCT e1.empid, e2.empid FROM emp e1 JOIN emp e2 ON e1.managerid=e2.managerid
   AND e1.salary>1500 AND e2.salary>1500;
   d) SELECT DISTINCT e1.empid, e2.empid FROM emp e1 JOIN emp e2 ON e1.managerid=e2.empid
   AND e1.salary>1500 AND e2.salary>1500;
   e) NOT ANSWERED

2. Consider the following table script of “emp" table.
   sss
   CREATE TABLE emp(
   empno NUMBER(4) CONSTRAINT PK_EMP PRIMARY KEY,
   ename VARCHAR2(10),
   job VARCHAR2(9),
   mgr NUMBER(4),
   hiredate DATE,
   sal NUMBER(7,2),
   comm NUMBER(7,2), deptno NUMBER(2) CONSTRAINT FK_DEPTNO
   REFERENCES dept);

   Display the empno, ename, sal and deptno of the employees whose sal is less than the average sal in their dept.

   Which one of the following SQL query will generate the required output?(2 Marks)

   a) SELECT empno, ename, sal, deptno FROM emp e1 WHERE sal < (SELECT

AVG(SAL) FROM emp);
b) SELECT empno, ename, sal, deptno FROM emp e1 WHERE sal < (SELECT AVG(SAL) FROM emp)
GROUP BY empno, ename, sal, deptno;
c) SELECT empno, ename, sal, deptno FROM emp e1 WHERE sal > (SELECT AVG(SAL) FROM emp);
d) SELECT empno, ename, sal, deptno FROM emp e1 WHERE sal < (SELECT AVG(SAL) FROM emp e2 WHERE e1.deptno = e2.deptno);
e) NOT ANSWERED

3. Which of the following statements is TRUE about Independent Sub-Query?
   a) Outer query executes based on the result of inner query.
   b) Inner query is dependent of outer query.
   c) Outer query executes first and then inner query executes.
   d) All the Above
4. Consider the table dept (deptno, dname, location).
   Assume that department with deptno 50 does not exist in the dept table.

   SQL>SET SERVEROUTPUT ON

   What is the output of the following PL/SQL code snippet?

   ```
   SQL>DECLARE
   v_deptno NUMBER(2) := 50;
   BEGIN
   DELETE FROM dept WHERE deptno = v_deptno;
   IF SQL%ROWCOUNT >= 0 THEN
   DBMS_OUTPUT.PUT_LINE( ' Record deleted' );
   ELSE
   DBMS_OUTPUT.PUT_LINE('Record not deleted');
   END IF;
   DBMS_OUTPUT.PUT_LINE('Implicit cursor closed');

   END;
   /
   ```

   a) PLSQL code gives an error because deptno 50 does not exist
   b) Implicit cursor closed
   c) Record deleted Implicit cursor closed
   d) Record not deleted Implicit cursor closed
   e) NOT ANSWERED
5. In which situation should you use another join query?
   a) The employee and region tables have no correspondence.
   b) The employee and region tables have corresponding columns.
   c) The employee table column correspond to the region table column contains null values for rows that need to displayed.

d) The employee table has two columns that correspond

6. A join without any conditions is called
   a) Inner Join
   b) Outer Join
   c) Cross Join
   d) Equi Join
7. Which of the following is a structure that provides faster access to the rows of a table based on the values of one or more columns?
   a) Table
   b) Index
   c) View
   d) Trigger
8. List the employee details whose salary is greater than the lowest salary of an employee belonging to deptno 20.
   a) select * from emp where sal > (select min(sal) from emp group by deptno having deptno=20);
   b) select * from emp where sal > (select min(sal) from emp having deptno=20);
   c) select * from emp where sal > (select min(sal) from emp group by deptno where deptno=20);
   d) select * from emp where sal > (select min(sal) from emp where deptno=20);

9. EXISTS & NOTEXISTS are usually used in conjunction with
   a) Nested query
   b) Independent subquery
   c) co-related subquery
   d) All the options

10. The database for an international athletic competition consists of one table athletes, containing contestant name, age, and represented country. To determine the youngest athlete representing each country, which of the following queries could be used?
    a) select name, country, age from athletes where (country, age) in (select min (age), country from athletes group by country) ;
    b) select name, country, age from athletes where (country, age) in (select country,min(age) from athletes) group by country;
    c) select name, country, age from athletes where age in (select country, min(age) from athletes group by country) ;
    d) select name, country, age from athletes where (country, age) in (select country,min(age) from athletes group by country) ;
11. You are writing a database application to run on your DBMS. You do not want your users to be able to view the underlying table structures. At the same time you want to allow certain update operations referring to the above scenario what structure will you deploy
    a) Cursor table
    b) Table filter
    c) Dynamic Procedure
    d) View

12. You have been asked to construct a query on Relational tables.You have deployed a right outerjoin operation. Referring to the above scenario what will be the final results when there is no match between the tables
    a) The right table Will return NULL
    b) Both tables will return NULL
    c) Left table will return all rows
    d) Right table will return all rows
13. In the declarative section of PL/SQL block, you created but did not initialize a number variable. when the block executes what will be the initial value of the variable?
    a) 0
    b) NULL
    c) It depends on the scale and precision of the variable
    d) the block will not execute because the variable was not initialized
14. What will be the output?
    SELECT last_name, first_name FROM employee WHERE SALARY IN (SELECT salary) FROM employee WHERE dept_no=3 OR dept_no=5);

    a) Last name and the first name of only the employees in the department number 3 and 5
    b) Last name and first name of all the employees except those working in the department 3 and 5
    c) Last name and first name of all the employees with the same salary as employee in the department 3 and 5.
    d) Last name and first name of only the employees whose salary falls in the range of salary from department 3 or 5.
15. The PLAYER table contains these columns
    id number(9), name varchar(2), managerid number(9)

    In this instance, managers are players with you need to display a list of players. Evaluate following 2 SQL statements:

    (1) SELECT p.name, m.name FROM player p, player m WHERE m.id=m.managerid;
    (2) SELECT p.name, m.name FROM player p, player m WHERE m.managerid=p.id;

    How would the results of these two queries differ?
    a) Statement 1 will not execute, Statement 2 will.
    b) Statement 1 will execute, Statement 2 will not
    c) Statement 1 is SELF JOIN, statement 2 is NOT.
    d) The results will be same but the display will be different.
16. You need to update employee salaries if the salary of an employee is less than 1000. The salary needs to be incremented by 10%. Use SQL*Plus substitution variable to accept the employee number. Which of these PL/SQL blocks successfully solve this problem?
    a) Declare
        V_sal emp.sal % TYPE;
        Begin

```
        SELECT Sal INTO V_sal FROM EMP WHERE empno = &p_empno;
    IF (V_sal <1000) THEN
        UPDATE emp INTO Sal :=Sal * 1.1 WHERE empno = &p_empno;
    END IF;
    END;
```

b)
```
Declare
    V_sal emp.sal % TYPE;
    Begin
        SELECT Sal INTO V_sal FROM emp WHERE empno = &p_empno;
    IF (V_sal <1000) THEN
    Sal :=Sal * 1.1;
    END IF;
    END;
```

c)
```
Declare
    V_sal emp.sal % TYPE;
    Begin
        SELECT Sal INTO V_sal FROM emp WHERE empno = &p_empno;
    IF (V_sal <1000) THEN
        UPDATE emp
        Sal :=Sal * 1.1 WHERE empno = &p_empno;
    END IF;
    END;
```

d)
```
Declare
    V_sal emp.sal % TYPE;
    Begin
        SELECT Sal INTO V_sal FROM emp WHERE empno = &p_empno;
    IF (V_sal <1000) THEN
        UPDATE emp SET
        Sal :=Sal * 1.1 WHERE empno = &p_empno;
    END IF;
    END;
```

17. Please look at the given executable section of a PL/SQL block:

```
FROM employee_record IN Salary_Cursor
Loop
   employee_id_table(employee_id) := employee_record.last_name;
END Loop
Close Salary_Cursor;
END;
```

Why does this section cause an error?

a) The cursor needs to be opened
b) Terminating conditions are missing
c) No FETCH statement were issued.
d) The cursor does not need to be explicitly closed

18. Consider the database SP

SNO	PNO	city

S1	p1	coimbatore
S2	p1	trichy
S3	p2	delhi
S4	p1	mysore

Select SNO from SP where PNO in (select PNO from SP where SNO='S2');
Find the output?

a) S1
b) S1, S2, S4
c) S2
d) S4

19. Which is used to call the procedure
Create procedure dept_count proc(in dept name varchar(20),
out d count integer)
begin
select count(*) into d count
from instructor
where instructor.dept name= dept count proc.dept name
end

a) Declare d_count integer;
b) Declare d_count integer;
call dept_count proc('Physics', d_count)
c) Declare d_count integer;
call dept_count proc('Physics');
d) Declare d_count;