

Database Management (BU.330.770) Final Exam Sample Questions

Functions (Single and Multiple Row Functions), GROUP BY, HAVING clauses

Answer the following questions (1 – 7) based on the EMPLOYEES table.

Column name	Data type	Description
Employee_id	NUMBER(6)	Unique identifier for each employee
First_name	VARCHAR2(20)	First name of the employee
Last_name	VARCHAR2(20)	Last name of the employee
Hire_date	DATE	The date when the employee was hired
Salary	NUMBER(8,2)	Monthly salary of the employee
Manager_id	NUMBER(6)	Employee ID of the manager
Department_id	NUMBER(4)	Department ID where the employee works

1. Write an SQL query to display the first three characters of the last_name column from the EMPLOYEES table and sort the query result by ascending order. Use an appropriate function.
2. Write an SQL query to display the number of months between the hire_date and today's date for each employee in the EMPLOYEES table.
3. Write an SQL query to convert the salary column in the EMPLOYEES table to display the value as \$999.99.
4. Write an SQL query to find the maximum salary for each department in the EMPLOYEES table. Display the department_id along with the maximum salary.
5. Write an SQL query to find all departments where the total monthly salary exceeds 100,000. Display the department_id and total salary.
6. Which arithmetic operation will return a numeric value?
 - a. SELECT SYSDATE – 6 FROM dual;
 - b. SELECT SYSDATE + 30 / 24 FROM dual;
 - c. SELECT NEXT_DAY (hire_date) + 5 FROM dual;
 - d. SELECT sysdate – hiredate FROM employees;
7. Which SQL statements could display the number of people with the same last name?
 - a. SELECT employee_id, COUNT(last_name)
FROM employees
GROUP BY last_name;
 - b. SELECT employee_id, DISTINCT(last_name)
FROM employees
GROUP BY last_name;
 - c. SELECT first_name, last_name, COUNT(employee_id)

```

FROM employees
GROUP BY last_name;
d. SELECT last_name, COUNT(last_name)
FROM employees
GROUP BY last_name;

```

8. Which of the following functions always returns a numerical value?
- LTRIM
 - LPAD
 - SUBSTR
 - INSTR
9. You need to replace null values in the DEPT_ID column with the text N/A. Which functions should you use (it's a hard question)?
- TO_CHAR and NVL2
 - TO_NUMBER and NVL2
 - NVL and NVL2
 - TO_CHAR
10. Write an SQL code to retrieve attendees' names and phone numbers separately from the following attendee column from the ATTENDANCE table:

Attendee
Darth Vader/123-123-1234
Bruce Wayne/234-234-2345
Sherlock Holmes/345-345-3456

11. Write an SQL code to display the book title, publisher ID, and wholesale discount rate. The following table shows the different wholesale discount percentages from each publisher. Refer to the BOOKS table below.

BOOKS table:

Name	Null?	Type	PubID	Wholesale discount
ISBN	NOT NULL	VARCHAR2 (10)	1	40%
TITLE		VARCHAR2 (30)	2	35%
PUBDATE		DATE	3	50%
PUBID		NUMBER (2)	4	30%
COST		NUMBER (5, 2)	5	45%
RETAIL		NUMBER (5, 2)		
DISCOUNT		NUMBER (4, 2)		
CATEGORY		VARCHAR2 (12)		

Answer Keys

1.

```
SELECT SUBSTR(last_name, 1, 3) lastname
FROM employees
ORDER BY lastname;
```
2.

```
SELECT MONTHS_BETWEEN(sysdate, hire_date)
FROM employees;
```
3.

```
SELECT TO_CHAR(salary)
FROM employees;
```
4.

```
SELECT department_id, MAX(salary)
FROM employees
GROUP BY department_id;
```
5.

```
SELECT department_id, SUM(salary) AS total_salary
FROM employees
GROUP BY department_id
HAVING SUM(salary) > 100000;
```
6. d)
7. d)
8. d)
9. a)
10.

```
SELECT SUBSTR(attendee, 1, INSTR(attendee, '/')-1) name,
SUBSTR(attendee, INSTR(attendee, '/')+1, 12) phone_number
FROM attendance;
```
11.

```
SELECT title, pubid, DECODE(pubid, 1, 0.4,
                             2, 0.35,
                             3, 0.5,
                             4, 0.3,
                             5, 0.45,
                             0) wholesale_discount
FROM books;
```