Database Programming with PL/SQL
Semester 1 Mid Term Review

Name: _____

1. PL/SQL stands for_____.
2. PL/SQL is a_____programming language.
3. The PL/SQL language uses which of the following (circle answers):

   a. Variables
   b. Cursors
   c. Conditional logic
   d. Data definition language

4. The basic unit in a PL/SQL program is a_____.
5. PL/SQL allows you to logically combine multiple SQL statements as one unit or block. The application can send the entire block to the database instead of sending the SQL statements one at a time. This significantly reduces the number of database calls. (True or False)
6. Name the three sections of a PL/SQL block.

   _____
   _____
   _____

7. The declarative section contains SQL statements and PL/SQL statements to manipulate data in the database. (True or False)
8. The three types of blocks that can make up a PL/SQL program are (circle answers):

   a. Anonymous
   b. Procedures
   c. Manipulative
   d. Functions

9. The following is what type of PL/SQL program? _____

```
DECLARE
  v_date DATE := SYSDATE; BEGIN
  DBMS_OUTPUT.PUT_LINE(v_date); END;
```

10. Where are subprograms stored? _____

11. In the LIKE operator, which symbol is used to represent a single text character or numeric digit (circle answer)?

    a. "_"
    b. "/"
    c. "&"
    d. "%" asdf

12. Which of the following can be used in the SELECT statement to return all columns of data in a table (circle answer)?

    a. ALL
    b. Columns
    c. *
    d. DISTINCT

13. The_____keyword is used to eliminate duplicate rows from the output of a SQL statement.

14. _____is a general function that converts a null value to a date, a character, or a number.

15. To avoid a Cartesian product, if there are four tables in the FROM clause, what is the minimum joins that must be specified (circle answer)?

    a. one
    b. two
    c. three
    d. four

16. PL/SQL variables can be used for (circle answers):

    a. Reusability
    b. Comments
    c. Stored values
    d. Default values

17. A reserved word can be used as an identifier in a PL/SQL program. (True or False)
18. Which are valid declaration statements? _____

    a. v_first_name := 'John';
    b. v_date DATE := TODAY;
    c. age_c NUMBER (3) != 25;
    d. count_loop BINARY_INTEGER := 0;

19. Why is the following statement invalid? v_valid

    BOOLEAN NOT NULL;

    _____

20. Select the correct method for declaring a variable of a previously declared variable or database column (circle answer).

    a. %LIKE
    b. %TYPE
    c. %COLTYPE

21. AVG, COUNT, and SUM are what type of functions? _____

22. Choose the statement that will run without error. _____

    a. SELECT region_id, COUNT(country_id) GROUP BY region_id
       FROM wf_countries WHERE region_id < 15;
    b. SELECT region_id, COUNT(country_id) FROM wf_countries
       WHERE region_id < 15
       GROUP BY COUNT(country_id);
    c. SELECT region_id, COUNT(country_id) FROM wf_countries
       WHERE region_id < 15 GROUP BY region_id;

23. Group functions can be used in subqueries. (True or False)

24. Subqueries must contain only one row to the main query. (True or False)

25. Which group functions below act on text, number and date datatypes (circle answers)?

    a. SUM
    b. MAX
    c. MIN
    d. AVG
    e. COUNT

26. In which instances listed below is a SQL function allowed in a PL/SQL procedural statement (circle answers)?

    a. Single-row character
    b. Date
    c. Group functions
    d. Data type conversion

27. Consider the following PL/SQL block. What occurs for this block to be valid? DECLARE
    v_salary NUMBER(6):=6000; v_sal_increase
    VARCHAR2(5):='1000'; v_total_salary
    v_salary%TYPE;
    BEGIN
    v_total_salary:= v_salary + v_sal_increase;

DBMS_OUTPUT.PUT_LINE(v_total_salary); END;

28. Indicate which statements are valid (circle answers).

    a. v_new_date DATE := '02-Jun-1992';
    b. v_new_date DATE := 'Yesterday';
    c. v_my_number NUMBER := '123';
    d. v_my_number NUMBER := '123abc';

29. Is the following a valid statement? Yes or No v_date_of_joining

    DATE:= 'February 02,2000';

30. Is the following a valid statement? Yes or No v_salary

    NUMBER;

31. Is the following a valid statement? Yes or No v_address

    VARCHAR2(30);

32. What is a lexical unit? _____

    a. A building block of a PL/SQL block
    b. A type of variable
    c. A data type for a variable

33. Which of the following is a composite data type? _____

    a. VARCHAR2
    b. RECORD
    c. CLOB

34. It is good programming practice to allow implicit data type conversions since they do not affect performance. (True or False)

35. The operators in SQL (logical, arithmetic, parentheses control, etc.) are the same for PL/SQL. (True or False)

36. In PL/SQL, a variable's _____
    nested within the declaring block.

is the block in which it is declared plus all blocks

37. If PL/SQL does not find the variable declared locally, it looks upward in the declarative section of the parent blocks. PL/SQL does not look downward in the child blocks. (True or False)

38. What is the value of the highlighted line of code in this block of code? _____

```
DECLARE
  v_father_name VARCHAR2(20):='Patrick';
v_date_of_birth DATE:='20-Apr-1972'; BEGIN
  DECLARE
    v_child_name VARCHAR2(20):='Mike'; v_date_of_birth
  DATE:='12-Dec-2002'; BEGIN
    DBMS_OUTPUT.PUT_LINE('Father"s Name: '||v_father_name);
    DBMS_OUTPUT.PUT_LINE('Date of Birth: '||v_date_of_birth);
    DBMS_OUTPUT.PUT_LINE('Child"s Name: '||v_child_name);
  END;
  DBMS_OUTPUT.PUT_LINE('Date of Birth: '||v_date_of_birth); END;
```

39. What values will be displayed when the following code is executed?

_____

_____

```
DECLARE
  v_name VARCHAR2(10); BEGIN
  v_name := 'Jay'; DECLARE
    v_name VARCHAR2(10); BEGIN
    DBMS_OUTPUT.PUT_LINE (v_name);
    v_name := 'Jayne'; END;
  DBMS_OUTPUT.PUT_LINE (v_name); END;
```

40. An exception can be dealt with in which of the following ways (circle answers)?

a. Handling it in the block in which it occurs
b. Propogating it to the calling environment
c. Handling it in an outer block in which it occurs

41. What are the two methods for adding comments to PL/SQL code?

_____

_____

42. Which of the following statements can you use in PL/SQL (circle answers)?

a. SELECT to retrieve data from the database.
b. DML statements such as INSERT to make changes to rows in the database.
c. DDL statements such as CREATE TABLE to manage objects in the database.
d. Transaction control statements such as SAVEPOINT to control transactional statements in the database.
e. DCL statements such as REVOKE to adjust privileges to the database objects.

43. Choose the valid statement. _____

a. SELECT first_name INTO v_fname
   FROM employees WHERE employee_id=200;
b. SELECT first_name INTO v_fname
   FROM employees WHERE employee_id IN (200, 201);
c. SELECT first_name FROM employees INTO v_fname
   WHERE employee_id=200;
d. SELECT first_name FROM employees
   INTO v_fname WHERE employee_id IN (200, 201);

44. What is the unique characteristic about the returned value of a PL/SQL SELECT statement?
_____

45. What are the two most common error messages for a PL/SQL SELECT statement?
_____

46. What would be the result of the following statement?
_____

```
DELETE employees;
```

47. To determine how many rows are affected by a statement, use the following implicit cursor attribute:

a. SQL%FOUND
b. SQL%NOTFOUND
c. SQL%ROWCOUNT
d. SQL%COUNT

48. You can use implicit cursor attributes such as SQL%ROWCOUNT directly inside a DML statement as in the following example. (True or False)

```
INSERT INTO log_table VALUES (USER, SYSDATE, SQL%ROWCOUNT);
```

49. To SELECT more than one row, you must declare and use_____.

50. Transaction control commands are valid in PL/SQL and therefore can be directly used in the executable section only of a PL/SQL block. (True or False)

51. What values are inserted into the pairtable table based on this PL/SQL code?
_____

```
BEGIN
  INSERT INTO pairtable VALUES (7, 8);
  SAVEPOINT my_sp_1;
  INSERT INTO pairtable VALUES (9, 10);
  SAVEPOINT my_sp_2;
  INSERT INTO pairtable VALUES (11, 12);
  ROLLBACK to my_sp_1;
  INSERT INTO pairtable VALUES (13, 14); COMMIT;
```

END;

52. Name the control structures in PL/SQL that change the logical flow of statements (circle answers).

a. IF statement
b. Loop statement
c. ROLLBACK statement
d. MERGE statement
e. CASE statement

53. An IF statement requires an ELSE condition. (True or False)

54. ELSEIF is the keyword that introduces a conditional expression. (True or False)

55. Select the valid IF statement. _____

a.
```
DECLARE
  v_myage NUMBER :=31; BEGIN
  IF v_myage < 11 THEN DBMS_OUTPUT.PUT_LINE(' I am a
  child '); ELSE
    DBMS_OUTPUT.PUT_LINE(' I am not a child '); END IF;
END;
```
b.
```
DECLARE
  v_myage NUMBER :=31; BEGIN
  IF v_myage < 11 THEN DBMS_OUTPUT.PUT_LINE(' I am a
  child '); ELSIF
    DBMS_OUTPUT.PUT_LINE(' I am not a child '); END IF;
END;
```
c.
```
DECLARE
  v_myage NUMBER :=31; BEGIN
  IF v_myage < 11 THEN DBMS_OUTPUT.PUT_LINE(' I am a
  child '); ELSE
    DBMS_OUTPUT.PUT_LINE(' I am not a child '); ENDIF;
END;
```

56. What is the maximum number of ELSIF statements you can use in an IF conditional statement?

57. Choose the correct statements about NULL values (circle answers).

a. Simple comparisons involving nulls always yield FALSE.
b. In conditional control statements, if a condition yields NULL, it behaves just like a FALSE.
c. Applying the logical operator NOT to a null yields NULL.

58. What will be displayed when this block is executed? _____

```
DECLARE
  v_alpha BOOLEAN := TRUE; v_beta
  BOOLEAN;
  v_char VARCHAR(4) := 'up'; BEGIN
  IF (v_alpha AND v_beta) THEN
    v_char:='down';
  ELSE v_char:='left'; END IF;
  DBMS_OUTPUT.PUT_LINE(v_char); END;
```

a. Up
b. Down
c. Left
d. Null

59. A CASE expression is just like an IF statement but with fewer words. (True or False)

60. A CASE expression returns one of a number of values into a variable. (True or False)

61. How do you terminate a case statement? _____

62. Select the correct CASE expression. _____

a.
```
v_appraisal := CASE
  WHEN v_grade = 'A' THEN 'Excellent'; WHEN v_grade
  IN ('B', 'C') THEN 'Good'; ELSE 'No such grade';
 END;
```

b.
```
v_appraisal := CASE
  WHEN v_grade = 'A' THEN 'Excellent' WHEN v_grade IN
  (('B', 'C') THEN 'Good' ELSE 'No such grade'
 END;
```

c.
```
v_appraisal := CASE
  WHEN v_grade = 'A' THEN 'Excellent' WHEN v_grade IN
  (('B', 'C') THEN 'Good' ELSE 'No such grade'
 END CASE;
```

63. A CASE statement may contain many PL/SQL statements. (True or False)

64. What is the value for v_flag in the following example? _____

```
DECLARE
  v_flag BOOLEAN;
  v_reorder_flag BOOLEAN := NULL;
v_available_flag BOOLEAN := FALSE; BEGIN
  v_flag := v_reorder_flag AND v_available_flag; END;
```

65. What is the statement required of a basic loop so that it will not be infinite? _____

66. How many times will the statement in the loop below execute? _____

```
DECLARE
  v_counter NUMBER := 1; BEGIN
  LOOP
    DBMS_OUTPUT.PUT_LINE('The square of '||v_counter||' is: '|| POWER(v_counter,2));
    v_counter := v_counter + 1; EXIT WHEN
  v_counter < 10; END LOOP;
END;
```

a. 1
b. 3
c. 9

67. When will a WHILE loop quit?

_____

68. The value for v_counter is initialized to 1. How many rows will be inserted into the locations table?

```
WHILE v_counter <= 3 LOOP
  INSERT INTO locations (location_id, city, country_id) VALUES((v_loc_id +
  v_counter), v_new_city, v_countryid); v_counter := v_counter + 1;
END LOOP;
```

a. 1
b. 2
c. 3
d. 4

69. In a WHILE loop, the controlling condition is checked at the start of each iteration. (True or False)

70. How many lines of output will be displayed? _____

```
DECLAREi := 2;
BEGIN
 WHILE i < 3 LOOP i := 4;
   DBMS_OUTPUT.PUT_LINE('The counter is: ' || i); END LOOP;
END;
```

71. How many times will the FOR loop below execute? _____

```
FOR i in 3..3 LOOP
        statement1;
END LOOP;
```

72. What is the last message from this example? _____

```
BEGIN
 FOR v_outerloop in 1..3 LOOP
  FOR v_innerloop in REVERSE 1..5 LOOP
    DBMS_OUTPUT.PUT_LINE('Outer loop is: '||v_outerloop|| ' and inner
    loop is: '||v_innerloop);
  END LOOP; END LOOP;
END;
```

a. Outer loop is: 3 and inner loop is: 5
b. Outer loop is: 1 and inner loop is: 5
c. Outer loop is: 3 and inner loop is: 1