## QUESTIONS:

PART A (30 Marks) Multiple Choice (est. 30 minutes)

PART B (14 Marks) Interview (short answer) questions (est. 15 minutes)

PART C (44 Marks) SQL Statements (est. 50 minutes)

TOTAL MARKS 88

## SPECIAL INSTRUCTIONS:

Write your answers in the spaces provided

## SENECA COLLEGE ACADEMIC POLICY:

CHEATING is an offence, which will not be tolerated by the College. Such offences occur when a student violates the procedures governing the administration of examinations, tests or other means of evaluating student achievement in a subject or program.

This test includes 7 pages plus the cover page.

# PART A: circle the BEST answer (2 marks each, 30 total)

1. Which is the subset of SQL commands used to manipulate data in a database.
2. Data Definition Language (DDL)
3. Data Manipulation Language (DML)
4. Both of above
5. None
6. Which SQL keyword(s) is used to sort the result-set from Z to A?
7. SORT BY <fieldname>;
8. SORT BY <fieldname> DESC;
9. ORDER BY <fieldname> DESC;
10. ORDER BY <fieldname> ASC;
11. We want to find all movies which their titles include the word “**The**”. Which of the following conditions results in the correct answer?
12. WHERE movie\_name IN (‘%THE%’)
13. WHERE movie\_name LIKE ‘%THE%’
14. WHERE UPPER (movie\_name) LIKE '%THE%'
15. WHERE UPPER (movie\_name) = '%THE%'
16. What must exist on the Parent table before a database will allow you to create a FOREIGN KEY constraint from a Child table?
17. A CHECK constraint must exist on the Parent table
18. A FOREIGN KEY constraint allows the constrained column to contain values that exist in the primary key column of the parent table
19. A PRIMARY or UNIQUE KEY constraint must exist on the Parent table
20. An index must exist on the Parent table
21. Consider the following statement and any potential errors?  
    SELECT first\_name fn, last\_name ln, gender  
     FROM actors a  
     WHERE upper(a.first\_name) LIKE ‘A%’ AND upper(ln) LIKE ‘M%’  
     ORDER BY ln, fn;
22. The “a” alias causes on error in the **FROM** portion of the statement
23. The “a” alias causes an error in the **WHERE** portion of the statement
24. The “ln” alias causes an error in the **WHERE** portion of the statement
25. Both the ln and fn aliases case errors in the **ORDER** BY portion of the statement
26. You need to remove the MOV\_GENID\_FK constraint from the MOVIES table in your schema. Which statement should you use?
27. DELETE CONSTRAINT MOV\_GENID\_FK FROM movies
28. ALTER TABLE movies DROP CONSTRAINT MOV\_GENID\_FK
29. ALTER TABLE movies REMOVE CONSTRAINT MOV\_GENID\_FK
30. DROP CONSTRAINT MOV\_GENID\_FK FROM movies
31. Consider the following table schema −  
    **STUDENTS(student\_code, first\_name, last\_name, email, phone\_no, date\_of\_birth, honours\_subject, percentage\_of\_marks);**   
      
    Which of the following query would display names of all the students whose honours subject is English, or honours subject is Spanish and percentage of marks more than 80?
32. SELECT first\_name, last name FROM students   
     WHERE (honours\_subject=“English” or honours\_subject=“Spanish” )   
     and percentage\_of\_marks > 80;
33. SELECT first\_name, last name FROM students   
     WHERE honours\_subject = “English” or honours\_subject = “Spanish”  
     and percentage\_of\_marks > 80;
34. SELECT first\_name, last name FROM students  
     WHERE honours\_subject = “English” and honours\_subject = “Spanish”  
     or percentage\_of\_marks > 80;
35. SELECT first\_name, last name FROM students   
     WHERE (honours\_subject=“English”) and honours\_subject=“Spanish”   
     and percentage\_of\_marks > 80;
36. Which query will perform a join between the HONOURS\_SUBJECT table and the LOCATIONS table where only those records that exactly match will be shown?
37. SELECT subject\_code, subject\_name, location\_id, city FROM honours\_subject cross join locations;
38. SELECT subject\_code, subject\_name, location\_id, city FROM honours\_subject join locations;
39. SELECT subject\_code, subject\_name, location\_id, city FROM honours\_subject outer join locations;
40. SELECT subject\_code, subject\_name, location\_id, city FROM honours\_subject right join locations;
41. In which of the following cases a DML statement is not executed?
42. When existing rows are modified
43. When some rows are deleted
44. When a table is deleted
45. All of the above
46. Which of the following code will successfully delete the table LOCATIONS from the database?
47. DROP TABLE locations;
48. DELETE TABLE locations;
49. TRUNCATE TABLE locations;
50. None of the above.
51. Which of the following statements will show students NOT enrolled in a course:
52. SELECT student FROM students RIGHT JOIN courses USING (CourseCode)   
     WHERE courseCode IS NULL;
53. SELECT student FROM students LEFT JOIN courses USING (CourseCode)  
     WHERE courseCode IS NULL;
54. SELECT student FROM students RIGHT courses USING (CourseCode)  
     WHERE courseCode NOT IS NULL;
55. SELECT student FROM students LEFT JOIN courses USING (CourseCode)  
     WHERE courseCode NOT IS NULL;
56. Which of the following statements are true regarding ‘referential integrity’:
57. A record may not be added to the child table unless a matching record already exists in the parent table
58. A record may not be deleted from the parent table if it has be referenced to in a child table
59. Using cascade update and delete is both powerful and dangerous if not used wisely
60. All of the above
61. None of the above
62. If a product serial number is made up of 10 numeric digits, which is the best datatype to use when considering storage space and efficiency?
63. INT
64. BIGINT
65. NVARCHAR(10)
66. CHAR(10) (Give 1 mark for this answer)
67. Either C or D will be okay
68. When adding a two new rows to a customer table, which of the following statements **will NOT work** when considering the following table schema?  
      
    **CUSTOMERS(custID, LName, FName, email, isActive)**
69. INSERT INTO customers   
     VALUES (1, ‘Smith’, ‘John’, ‘jsmith@gmail.com’);  
    INSERT INTO customers   
     VALUES (2, ‘Patel’, ‘Ravi’, ‘rpatel@yahoo.com’);

INSERT INTO customers   
 VALUES (1, ‘Smith’, ‘John’, ‘jsmith@gmail.com’, 1),  
 (2, ‘Patel’, ‘Ravi’, ‘rpatel@yahoo.com’, 1);

INSERT INTO customers (custID, LName, FName, email)  
 VALUES (1, ‘Smith’, ‘John’, ‘jsmith@gmail.com’),  
 (2, ‘Patel’, ‘Ravi’, ‘rpatel@yahoo.com’);

INSERT INTO customers (custID, LName, FName, email, isActive)  
 VALUES (1, ‘Smith’, ‘John’, ‘jsmith@gmail.com’, 1);  
INSERT INTO customers (custID, LName, FName, email, isActive)  
 VALUES (2, ‘Patel’, ‘Ravi’, ‘rpatel@yahoo.com’, 1);

All the above statements work

None of the above statements work

1. Which of the following is not true about the ALTER TABLE statement?
2. It can add a new row.
3. It can add a new column.
4. It can modify existing columns.
5. It can define a default value for the new column.

# PART B: Short Answer (14 Marks)

1. Name five different constraint on a table. **(5 Marks)**

PK, FK, Index, Required, Check, Default, Unique

1. What is the purpose of a junction/bridge table? **(3 Marks)  
     
   To simulate a many-to-many relationship in the physical database with two opposite 1-to-many relationships as a m2m relationship cannot be physically created.**
2. Match the Data Concept with the data storage type. **(6 Marks)**  
   (Write the appropriate Code letter in the Answer Column, marks deducted for incorrect answers).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Concept** | **Answer** |  | **Code** | **Data Type** |
| a north American phone number | C |  | A | VARCHAR(#) |
| A 10 character product code containing both numbers and letters | E |  | B | TINYINT |
| The name of a province in a foreign country | A |  | C | BIGINT |
| The price of a product | F |  | D | INT |
| A numeric value for storing the number of doors a vehicle has | B |  | E | CHAR(#) |
| A numeric ID value for a franchise location of Tim Hortons | D |  | F | DECIMAL(#,#) |

# Part C – SQL Statements

Use the following table definitions and data to answer the following questions (Please do not remove these pages from the paper)  
  
  
  
**STAFF**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EMP\_ID | STAFF\_NAME | SALES\_OFFICE | OFFICE\_NUMBER | MAX\_CUSTOMERS | ACTIVE |
| 1003 | Mary Smith | Toronto | 416-666-2112 | 10 | 1 |
| 1004 | John Hunt | Ottawa | 950-345-2323 | 6 | 1 |
| 1005 | Martin Hap | London | 366-404-5775 | 4 | 1 |

**CUSTOMER**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CUST\_ID | EMP\_ID | CUST\_NAME | EMAIL | ADDRESS |
| 1000 | 1003 | George Wish | gwashington@email.ca | 3200 Mt Vernon Hwy |
| 1010 | 1003 | John Adams | jadams@email.ca | 1250 Hancock St |
| 1020 | 1004 | Thomas Andrew | tjefferson@email.ca | 931 Thomas Jefferson Pkwy |
| 1030 | 1004 | James Madison | jmadison@email.ca | 11350 Constitution Hwy |
| 1040 | 1004 | James Monroe | jmonroe@email.ca | 2050 James Monroe Parkway |
| 1050 | 1005 | Maria Stone | maria@email.ca | 110 Keele St |

**STAFF**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Column | Type | Length | scale | PK | Required |
| EMP\_ID | String | 4 |  | Y | Y |
| FIRST\_NAME | String | 30 |  |  | Y |
| LAST\_NAME | String | 30 |  |  | Y |
| SALES\_OFFICE | String | 20 |  |  | Y |
| OFFICE\_NUMBER | String | 12 |  |  | Y |
| MAX\_CUSTOMERS | Numeric | 2 | 0 |  | Y |

1. Write the SQL command to create the “**STAFF**” table along with defining the PK constraint.   
   **DO NOT** define Unique and validation constraints for other columns yet. **(10 Marks)**

1. Consider the **CUSTOMER** table already created, write an alter command to add a foreign key constraint on an appropriate column from the **STAFF** table. **(5 Marks)**

1. Write an alter command to add a constraint limiting the maximum number of customers to a number from 0 to 15 in table **STAFF**. **(5 Marks)**

1. Write a query to display all staff information for all employees from table **STAFF**. **(3 Marks)**

1. Write a query that would display the following results. **(6 Marks)**

|  |  |  |
| --- | --- | --- |
| Customer | Representative | Address |
| George Wish | Mary Smith | 3200 Mt Vernon Hwy |
| John Adams | Mary Smith | 1250 Hancock St |
| Thomas Andrew | John Hunt | 931 Thomas Jefferson Pkwy |
| James Madison | John Hunt | 11350 Constitution Hwy |
| James Monroe | John Hunt | 2050 James Monroe Parkway |
| Maria Stone | Martin Hap | 110 Keele St |

1. Write a query to update the maximum number of customers to 8 for the employee Martin Hap.   
   **(5 Marks)**

1. Write a **SQL** command to FIRE Martin Hap (i.e. he no longer works for the company. **(5 Marks)**

1. Write a SQL command to remove the **CUSTOMER** table from the database. **(5 Marks)**