**NAIROBI INSTITUTE OF BUSINESS STUDIES**

**DEPARTMENT OF COMPUTER SCIENCE**

**DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY (KNEC)**

**END OF TERM EXAMINATION– MARCH 2015**

**TIME ALLOWED: 2 HOURS**

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| **INSTRUCTIONS:**   1. Answer **ALL the Four questions.** 2. **Time allowed is 2 hours.** 3. Any examination **irregularity** will lead to **disqualification.** 4. Indicate your **Admission No**. in each answer sheet provided. 5. Cell phones should be switched off during the examination. 6. No reference material of any kind should be carried into the examination room. 7. Marks may be lost for illegibility. 8. All questions carry equal marks. |

**DATABASE MANAGEMENT SYSTEMS**

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**Question 1**Identify and discuss the series of steps that a database designer should carry out when designing a new database system, prior to implementation. **(10 marks)**

**Question 2**  
Explain what is meant by the term ‘data definition language’ or ‘DDL’, and analyse the FOUR basic DDL commands. **(6 marks)  
  
  
Question 3**

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| --- | --- | --- | --- | --- |
| ID | CITY | COUNTRY | LAT | LONG |
| 12 | Algiers | Algeria | 37 | 3 |
| 15 | Beijing | China | 40 | 117 |
| 17 | Bogota | Colombia | 5 | -74 |
| 23 | Buenos Aires | Argentina | -35 | -58 |
| 35 | Cairo | Egypt | 30 | 31 |
| 37 | Cape Town | South Africa | -34 | 18 |
| 42 | Dakar | Senegal | 15 | -17 |
| 45 | Djibouti | Djibouti | 12 | 43 |
| 56 | Havana | Cuba | 23 | -82 |
| 67 | Kinshasa | Congo | -4 | 15 |
| 75 | Mexico City | Mexico | 19 | -99 |
| 83 | Nairobi | Kenya | -1 | 37 |
| 92 | Tokyo | Japan | 36 | 140 |

The table above stores the latitude and longitude of cities around the world. A positive latitude indicates East and negative West, while a negative longitude indicates North and negative South. Assuming CITY and COUNTRY may have up to 20 characters:

(a) Write the SQL to create the table. **(5 marks)**

(b) Write the SQL to add the city London in England with latitude 52 N, longitude 0 and ID 70. **(5 marks)**

(c) Write the SQL to query the table to find only the cities and their countries in the northern hemisphere. **(5 marks)**

**Question 4**  
Explain the purpose of SQL. Illustrate your answer with THREE examples of SQL commands, explaining their function. **(8 marks)**

1. State **four** characteristics of data in a relational database. (4marks)
2. Distinguish between *logical* and *physical* data independence as used in databases. (4 marks)
3. Outline **three** elements that constitute a database. (3 marks)
4. Describe each of the following terms as used in databases:
   1. Data redundancy
   2. Data isolation
   3. Data integrity (6 marks)
5. Outline **three** examples of Data Definition Language commands. (6marks)
6. Explain **two** disadvantages of using object oriented database model. (4 marks)
7. Explain the role of **three** key database users. (3 marks)