****

**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2018/2019 ACADEMIC YEAR TWO**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY**

**FOR THE DEGREE OF BACHELOR OF INFORMATION SCIENCE**

**COURSE CODE: INS 211**

**COURSE TITLE: DATA BASE MANAGEMENT AND CONSTRUCTION**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 06/02/2020 TIME: 2.00-4.00 PM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of FOUR (4) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Explain THREE advantages of using a computerized database system. **[6 marks]**
2. Differentiate between **[4 marks]**
   1. Logical view and physical view in database
   2. Primary index and secondary index
3. Briefly describe the following database models structures. **[4 marks]**
   1. Network
   2. Relational
4. Explain the stages of developing a database system. **[6 marks]**
5. Briefly describe the roles of the following people in client/ server database. **[4 marks]**
   1. Administrator
   2. User
6. Explain the ACID properties in distributed database systems. **[6 marks]**

**QUESTION TWO**

1. The details below represent data stored in a retail shop about products and customer orders.

(i) Admission (ii) Treatment details (iii) Discharge details

Admission number Treatment number Discharge number

Gender Admission number Admission number

First name Doctor name Medicine bill

Last name Diagnosis admission bill

Date of birth Recommendation other bills

Address Medication

1. Identify the most appropriate key to be the primary key for each table then show relationships among the tables. **[6 marks]**
2. Explain four field properties in the tables.  **[4 marks]**
3. Explain THREE disadvantages of DBMS **[6 marks]**
4. Explain the roles of a database administrator.  **[4 marks]**

**QUESTION THREE**

ABC Bus Company operates fleet of buses and would like to design the system. The following information shows entities involved in the system.

1. Each passenger is booked in one bus.
2. A driver can drive more than one bus.
3. Buses travel to different destinations.
4. The buses can be services in any garage owned by the company.
5. Explain the following terms **[4 marks]**
   1. Entity Relation Diagram
   2. cardinality
6. Identify entities in the bus company fleet system. **[4 marks]**
7. Use an Entity Relation Diagram (ERD) to show relationship among the entities **[6 marks]**
8. ABC Company would like to develop a relational database management system. Advice the management on the stages of developing a database system **[6 marks]**

**QUESTION FOUR**

1. Define the following term Normalization **[2 marks]**
2. Explain three roles of normalization **[6 marks]**
3. A student was called upon to develop a database. He quickly developed an un-normalized with the following fields project code, project title, project manager, project budget, employee number, employee name, department number, department name, hourly rate
   1. Normalize the above table to 3NF and correct the redundancies on the resultant tables **[9 marks]**
   2. Explain which attributes from the normalized tables are going to link together to form the relationships **[3 marks]**

**QUESTION FIVE**

1. The table below shows details of Students marks in a secondary school.

Stdno Fname lname Maths English Kiswahili Total

4352 Peter Mwangi 45 65 45

4535 Paul Mwiti 44 76 65

4536 Mary Atieno 54 35 55

4537 Sam Mutua 33 67 25

4538 Sarah Chepkoech 66 66 33

4539 Amina Abdi 43 55 78

Write an expression that will extract records that satisfy the following conditions.

1. List all students with lname first letter “m”. **[2 marks]**
2. List all students who scored 60 and above in English. **[2 marks]**
3. List all students with the fname second letter “a”. **[2 marks]**
4. List all students who scored between 20 and 60 in Mathematics. **[2 marks]**
5. Write query expression to:
   1. Calculate total marks for each student. **[3 marks]**
   2. Calculate average marks for each student. **[3 marks]**
6. Briefly explain the meaning of the following SQL statements. **[4 marks]**
   1. ALTER TABLE employee ADD (netsalary float);
   2. ROLLBACK TO SP2;
7. Differentiate between a trigger and synonym. **[2 marks]**