MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

BACHELOR OF SCIENCE (ACTURIAL SCIENCE)

SCO 206/SST 203: DATABASE SYSTEMS

DATE: 18/3/2022 **TIME: 2:00 – 4:00 PM**

INSTRUCTIONS

Answer question ONE and any other TWO questions

QUESTION ONE(COMPULSORY) (30 MARKS)

a) Using real world examples, Explain the following terms as used in database systems:-

i. Entity (3 marks)

ii. Entity Type (3 marks)

iii. Entity Set (3 marks)

b) Describe three levels of abstraction in the DBMS? (6 marks)

c) Highlight three types and use and application of various Relational Database Keys (6 marks)

d) Describe :-

i. The best practices in database security that can help keep your databases safe from attackers. (4 marks)

ii. The properties of second normal form (5 marks)

QUESTION TWO (20 MARKS)

a) Define a CLAUSE in terms of SQL (2 marks)

b) Analyse the integrity rules that exist in the DBMS (6 marks)

c) Explain two disadvantages of ER Model in DBMS (4 marks)

d) Discuss the characteristics of a relational table (8 marks)

QUESTION THREE (20 MARKS)

a) Define a distributed database system (1 mark)

b) Using a relational illustration, explain functional dependency in the DBMS (3 marks)

c) Describe the Importance of Data Modeling in DBMS (4 marks)

d) Use the table below to answer questions that follow.

salesman_id	name	city	commission
5001	James Kamau	Nairobi	0.15
5002	Nancy Okoth	Kisumu	0.13
5005	Alex Lewa	Mombasa	0.11
5006	Mercy Mueni	Kisumu	0.14
5007	Paul Adam	Nakuru	0.13
5003	Derrick Pemba	Kampala	0.12

i. Write an SQL statement to create a database "Machakos Merchants" that will be used for the above table. (2 marks)

ii. Write an SQL statement that could be used to create the above table. (4 marks)

iii. Write a SQL statement to display all the information of all salesmen. (2 marks)

iv. Write a SQL statement to display those salesmen who come from Kisumu city. (4 marks)

QUESTION FOUR (20 MARKS)

a) Define a RDBMS (2 marks)

b) Explain three characteristics of Network Database Management System (DDBMS) (8 marks)

c) Discuss Problems of Traditional File System Data Management Processing. (6 marks)

d) Explain four applications of database systems (4 marks)

QUESTION FIVE (20 MARKS)

a) Define normalization in databases systems (2 marks)

b) Explain why normalization should be done on databases (5 marks)

c) Using illustrations, Describe three types of relationships in the DBMS (5 marks)

d) Analyse four states of transaction management in DBMS (8 marks)