



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (ELECTRICAL AND ELECTRONIC ENGINEERING)

EEE 207: DATA BASE MANAGEMENAGEMENT SYSTEMS

DATE: 7/12/2020

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain, using your own examples, how the following database concepts are implemented
 - i. Data integrity (3 marks)
 - ii. Data validation (3 marks)
 - iii. Data security (3 marks)
- b) Discuss three database users involved in database design (6 marks)
- c) Identify four types of keys used in database design (4 marks)
- d) Explain THREE characteristics of a good data base design (6 marks)
- e) Discuss TWO problems that could arise due to interference between concurrent transactions. (4 marks)

QUESTION TWO (20 MARKS)

- a) Explain two characteristics of using a primary key during database design (4 marks)
- b) Describe, using examples the problems that can occur in a multi-user environment when concurrent access to the database is allowed. (10 marks)
- c) Discuss the integrity constraints that could be applied to a database management system during its design stage. (6 marks)

QUESTION THREE (20 MARKS)

- a) Identify TWO update anomalies associated with poor database design. (2 marks)
- b) Sharif is a newly recruited database administrator, Explain four roles that he would be expected to perform in his everyday operations (6 marks)
- c) Describe advantages and disadvantages of using a database system over the use of spreadsheets. (6 marks)
- d) Briefly discuss three types of database models (6 marks)

QUESTION FOUR (20 MARKS)

- a) Connectivity and Cardinality is the connectivity of a relationship that describes the mapping of associated entity instances in the relationship. By using real world examples, describe any three of the cardinalities as used in DBMS (6 marks)
- b) Describe the conceptual database design process steps (6 marks)
- c) with illustrations, Explain the meaning of the following as used in databases
 - i. Transitive dependence (4 marks)
 - ii. Non- prime attribute (4 marks)

QUESTION FIVE (20 MARKS)

- a) Using SQL Commands create a database called ORG (2 marks)
 - i. Create a table in the database created above and call it Worker with the attributes, WORKER_ID INT NOT NULL PRIMARY KEY AUTO_INCREMENT, FIRST_NAME CHAR(25), LAST_NAME CHAR(25), SALARY INT(15), JOINING_DATE DATETIME, DEPARTMENT CHAR(25) (2 marks)
 - ii. Insert into worker table three workers and their respective details (2 marks)
 - iii. Write An SQL Query To Fetch Unique Values Of DEPARTMENT From Worker Table. (2 marks)
 - iv. Write an SQL Query to Print Details of the Workers Who's FIRST_NAME Ends with 'A'. (2 marks)

- b) Produce the Third Normal Form of this document by normalization. (10 marks)

ORDER FORM			
Order number: 1234			
Customer number: 9876			
Customer name: Billy			
Customer address: 456 Hightower Street			
City-country: Kisumu Kenya			
Product No	Description	Quantity	Unit Price
A123	Pencil	100	Ksh30.00
B234	Erasor	200	Ksh15.00
C345	Sharpener	5	Ksh80.00