



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (ELECTRICAL AND ELECTRONIC ENGINEERING)

EEE 207: DATA BASE MANAGEMENT SYSTEMS

DATE: 29/7/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

QUESTION ONE

- a) Explain, using your own examples, how the following database concepts are implemented
- i. Data integrity (4 Marks)
 - ii. Data validation (4 Marks)
 - iii. Data security (2 Marks)

A tennis club uses the following table to record details of players and their coaches.

PlayerID	Name	Ranking	CoachID	CoachName
P001	Kariuki	12	C003	Ben
P002	Okoth	3	C013	Mark
P003	Tanui	17	C003	Ben
P004	Mosioma	9	C006	Titus

- (i) Explain why the above table is not in 3rd normal form. (4Marks)
 - (ii) Transform the table into 3rd normal form. (6 Marks)
- b) The table below records orders for items. Each order is placed on a given date, and may include a variety of items in different quantities.

Orders

OrderNo	ItemNo	Description	Date	Quantity
1	12	Screw	6th jan	100
1	15	bolt	6th jan	50
2	7	Flange	Feb 2nd	10
2	15	Bolt	Feb 2nd	40
2	12	screw	Feb 2nd	80

- (i) Give an example of an insertion anomaly and an example of modification (update) anomaly that might occur in the above table. (4 Marks)
- (iii) Transform the table into 2nd Normal Form (6 Marks)

QUESTION TWO

- a) Explain two characteristics of a good data base design (6 marks)
- b) Explain two problems that could arise due to interference between concurrent transactions. (4 marks)
- c) Distinguish between a distributed database and a distributed database management system. (4 marks)
- d) Explain three goals of requirement analysis phase in a database design life cycle. (6 marks)
- The purpose of the Requirements Analysis Phase is to transform the needs and high-level requirements specified in earlier phases into...

QUESTION THREE

- a) Describe three integrity constraints that could be applied to a database management system during its design stage. (6 marks)
- b) Explain two update anomalies associated with poor database design. (2 marks)
- c) Sharif is a newly recruited database administrator. Explain four roles that he would be expected to perform in his everyday operations (6 marks)
- d) Describe five advantages of using a database system over the use of spreadsheets. (6 marks)

QUESTION FOUR

- a) Highlight three characteristics of using a primary key during database design (6 marks)
- b) 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 four of the cardinalities as used in DBMS (8 marks)
- c) Explain the meaning of the following as used in databases
 - i. Transitive dependence (4 marks)
 - ii. Non- prime attribute (4 marks)

QUESTION FIVE

- a) Describe, using an example, one type of problem that can occur in a multi-user environment when concurrent access to the database is allowed. (10 marks)
- b) By using illustrations, state the difference between hierarchical and network database models (10 marks)