



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

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 MANAGEMENT SYSTEMS

DATE: 13/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

QUESTION ONE (30 MARKS)

- a) Distinguish between data control languages and data definition languages as used in data base management systems. (4 marks)
- b) A property management company with branches across the country intends to install a centralized database management system. Explain two challenges that the company is likely to encounter when using the database management system. (4 marks)
- c) Distinguish between a distributed database and a distributed database management system. (4 marks)
- d) Briefly answer the following questions based on this schema:

Emp(eid: integer, ename: string, age: integer, salary: real)

Works(eid: integer, did: integer, pct time: integer)

Dept(did: integer, budget: real, managerid: integer)

REQUIRED

- i. Draw the ER diagram to represent the schema above. (6 marks)
- ii. Using Five Tuples, Draw the Relation; (6 marks)
- iii. Suppose you have a view SeniorEmp defined as follows:
- iv. CREATE VIEW SeniorEmp (sname, sage, salary)

AS SELECT E.ename, E.age, E.salary FROM Emp E WHERE E.age > 50

Explain what the system will do to process the following query:

```
SELECT S.sname
```

```
FROM SeniorEmp S
```

```
WHERE S.salary > 100,000
```

(6 marks)

QUESTION TWO (20 MARKS)

- a) Explain the functions of a database manager. (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)

QUESTION THREE (20 MARKS)

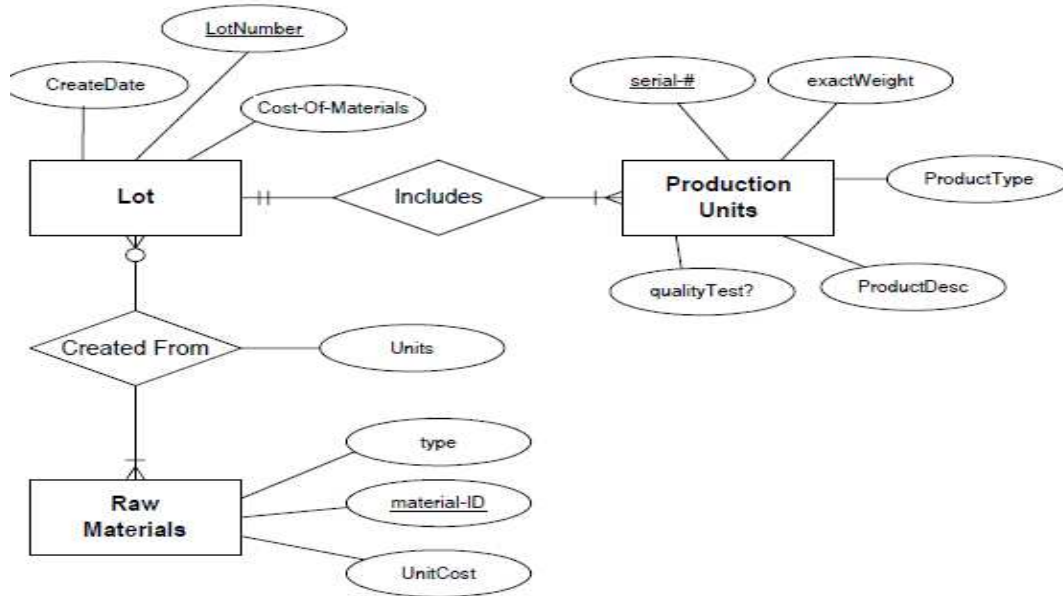
- a) Describe three integrity constraints that could be applied to a database management system during its design stage. (6 marks)
- b) Explain two update anomalies associated with poor database design. (2 marks)
- c) Sharif is a newly recruited database administrator. Explain four roles that he would be expected to perform in his everyday operations (6 marks)
- d) BiTech is a company with information stored in its database. Explain three computer based security control features that the company could put in place to enhance the security of the information. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Abacus ltd uses file based systems in its operations, explain four challenges the company could be facing. (4 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 goals of the requirements analysis in database design (8 marks)

QUESTION FIVE (20 MARKS)

- a) The following ER diagram captures important information in the tracking of production. Specifically, the ER diagram captures relationships between production lots (or batches), individual production units, and raw materials.



Required

Convert the ER diagram into a relational database schema. Be certain to indicate primary keys (15 marks)

- b) Identify an attribute in the above ER diagram that might represent a composite attribute, and explain why/how it might represent a composite attribute (5 marks)