THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY (DIT 2K 10J)

EIT 2204: DATABASE MANAGEMENT SYSTEMS I

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2011
TIME: 2 HOURS

SECTION A (COMPULSORY)

Question One (30 Marks)

a) What is DML (Data Manipulation Language)? (2 Marks)

b) Explain any **TWO** disadvantages of Database systems (4 Marks)

c) Mention any **THREE** advantages of views? (6 Marks)

d) Explain the difference between external, internal and conceptual schemas. How are these different layers related to the concepts of logical and physical and physical data independence? (8 Marks)

e) Explain, why Relational model is more popular than the other models. (4 Marks)

f) List Codd's rules to qualify a database as relational. (6 Marks)

SECTION B (Answer any TWO questions from this Section)

Question Two (20 Marks)

a) Explain with examples, how primary key and foreign key concepts is useful in relational data model? (3 Marks)

b) How does the concept of an object in the object-oriented model differ from the concept of an entity in the entity-relationship model? (4 marks)

c) Suppose that you have been hired as a consultant to choose a database system for your client's application. For each of the following applications, state what type of database model you would recommend. Justify your recommendation.
      i.   A simple user access program
      ii.   A system to track contributions made to candidates for public office
      iii.   An information system to support the making of movies (6marks)

d) With an example, explain a Relation Schema and a Relation? (4 Marks)

e) Name any **THREE** disadvantages of file processing system (3 Marks)

Question Three (20 Marks)

a) What is Functional Dependency? (2 Marks)

b) Explain the different types of attributes (3 Marks)

c) A company has several departments. Each department has a supervisor and at least one employee. Employees must be assigned to at least one, but possibly more departments.
At least one employee is assigned to a project, but an employee may be on vacation and not assigned to any projects. The important data fields are the names of the departments, projects, supervisors and employees, as well as the supervisor and employee number and a unique project number.
    i) Identify the Entities in the above case.
    ii) What are relationships between the identified entities?
    iii) Draw an Entity Relationship diagram to demonstrate the connectivity between the various entities. (15 Marks)

Question Four (20 Marks)

a) Briefly explain distributed databases and its concept. (5 Marks)

b) Explain the following Database terms with the help of an example
    i)   Data Independence
    ii)   Domain
    iii)   Foreign Key
    iv)   Cardinality
    v)   Referential Integrity (10 Marks)

c) Explain the concept of a client Server database (5 Marks)

Question Five (20 marks)

a) Explain the functions of a database administrator (4 marks)

b) Explain any **FOUR** database models. (8 marks)

c) A university registrar's office maintains data about the following entities: (a) courses, including number, title, credits, syllabus, and prerequisites; (b) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; (c) students, including student-id, name, and program; and (d) instructors, including identification number, name, department, and title.
Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.
Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints. (8 marks)