



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

**(A Constituent College of JKUAT)**

(A Centre of Excellence)

# **Faculty of Engineering & Technology**

**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY**

**DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY**

**DIPLOMA IN INFORMATION TECHNOLOGY**

**(DICT 2K 11M, DICT 11M, DIT 2K 11M, DIT 11M, DICT 10A)**

**EIT 2202 ECT 2201: DATABASE SYSTEMS**

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**SERIES: OCTOBER 2012**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions  
Answer question **ONE** and any other **TWO** questions  
Maximum marks for each part of a question are as shown  
This paper consists of **THREE** printed pages  
**SECTION A (COMPULSORY)**

**Question One (30 marks)**

- a) Define the following database terms:  
i) Database  
ii) DBMS  
iii) DDL  
iv) Replication  
v) Attribute **(10 marks)**
- b) Explain **THREE** different types of Attributes. **(3 marks)**
- c) Explain **THREE** factors to consider in choosing a DBMS. **(3 marks)**
- d) With the aid of a diagram, explain **THREE** levels of ANSI/SPARC database architecture. **(7 marks)**
- e) Differentiate between physical and logical data independence. **(4 marks)**
- f) Name any **THREE** disadvantages of file processing system. **(3 marks)**

**SECTION B (Answer Any Two Questions)**

**Question Two (15 marks)**

- a) List any **THREE** disadvantages of database systems. **(3 marks)**
- b) Explain the difference between horizontal and vertical fragmentation. **(4 marks)**
- c) Explain any **FOUR** database models. **(8 marks)**

**Question Three (15 marks)**

- a) Explain the concept of a client server database. **(5 marks)**
- b) 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 is the relationship between the identified entities?  
iii) Draw an entity relationship diagram to demonstrate the connectivity between the various entities. **(10 marks)**

**Question Four (15 marks)**

- a) Explain the following Database terms:  
i) Data Independence  
ii) Domain  
iii) Foreign Key

- iv) Cardinality
- v) Referential Integrity **(10 marks)**

b) With the use of an example, explain the INF. **(5 marks)**

**Question Five (15 marks)**

- a) Explain transparency as used in distributed database systems. **(5 marks)**
- b) Write the SQL statement for the following descriptions.
- i) Create a table Employee with the following fields emp\_num(primary key), emp\_fname, emp\_lname, job\_class, hiredate.
  - ii) Add a new column SSNO to the table employee above.
  - iii) Insert 1 row of data (an employee) into the employee table.
  - iv) Show all the employees in the employee table
  - v) Remove the employee table and all its data. **(10 marks)**