



# MURANG'A UNIVERSITY COLLEGE

(A Constituent College of Jomo Kenyatta University of Agriculture and  
Technology)

University Examinations 2015/2016 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

**SPECIAL/SUPPLEMENTARY SEMESTER EXAMINATION FOR THE  
DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY**

**ICS 2206: DATABASE SYSTEMS**

**TIME 2 HOURS**

**MAIN CAMPUS**

**DATE:28<sup>TH</sup> OCTOBER 2015**

**TIME:2HOURS**

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*Instructions: Answer Question 1 and Any Other Two.*

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## **Question 1**

- a) Define the following terms:
- i) Database
  - ii) Referential integrity
  - iii) Candidate key (6 marks)
- b) Distinguish between a weak entity and a strong entity set. (4 marks)
- c) Explain the roles of the following database users
- i) DBA
  - ii) Sophisticated end user (2marks)
- d) Describe the functions of the following commands used in SQL
- i) Drop table
  - ii) Create Schema (4marks)
- e) Explain any two causes of database failure. (4 marks)
- f) Database approach provides managerial end users with several benefits. Discuss these benefits. (10 marks)

**Question 2**

- a) Outline three advantages and two disadvantages of data replication. (5 marks)
- d) Illustrate an E – R diagram which shows the following hospital environment.  
Theatres, patients (In and Out), Doctors, Nurses, Wards, Ward beds. (10 marks)
- d) Briefly describe any 5 components which make up a Database Management System. (5 marks)

**Question 3**

- a) i) Define the term Normalization. (2marks)
- ii) State any 3 advantages of Normalization. (3marks)
- ii) Explain the 3<sup>rd</sup> normal form (4 marks)
- b) Distinguish between the following types of attributes.
- i) Simple and composite
- ii) Single valued and multivalued
- iii) Null and calculated (6 marks)
- c) Explain the two phase locking technique of deadlock avoidance and state how it guarantees serializability. (5marks)

**Question 4**

- b) You are planning for the security of the database on which your organization runs. Discuss any three security issues about planning you should consider. (8 marks)
- c) Your organization currently does not run any database. The management would like you to understand what a database is all about. Explain the database system lifecycle they should prepare to embrace if they wish to have a database for their operations. (12marks)