



KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SPECIAL AND SUPPLEMENTARY
EXAMINATIONS**

**FOR THE DEGREE IN
COMPUTER SCIENCE**

COURSE CODE : CSC 461E
**COURSE TITLE : DATABASE ADMINISTRATION
AND PROGRAMMING**

DATE: 02/02/2021 TIME: 02:00 P.M – 04:00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

[8 Marks]

a) List and briefly explain the security features of a DBMS

[8 Marks]

b) Explain the use of the following database administration tools

a) Job scheduler

b) Server Configuration

c) Performance Monitor

d) Database Tuner

c) Describe one of the possible problems generated by concurrent access to the same data and illustrates how the problem can be resolved by using the locking mechanism [9 Marks]

During the processing of the 2-phase commit protocol, what does the co-coordinator process do if it is informed by a local resource manager process that it was unable to force write all log entries for the local resources used by the transaction out to its own physical log? [5 Marks]

QUESTION TWO [20 MARKS]

a) Explain how DBMS locks work and distinguish between the various types of locks [10 Marks].

[10 Marks].

b) Describe concurrency control. [2 Marks]

[2 Marks]

c) Explain the properties of concurrency control. [3 Marks]

[3 Marks]

d) Briefly describe the uncommitted dependency problem and explain how it can be solved. [5 Marks]

[5 Marks]

QUESTION THREE [20 MARKS]

a) Give **two** objectives of query processing. [4 Marks]

[4 Marks]

b) Briefly outline main role of database administrator [4 Marks]

[4 Marks]

c) Discuss any two tools used by database administrator to perform above roles [4 Marks]

[4 Marks]

d) Differentiate between system privileges and object privileges. [4 Marks]

[4 Marks]

e) Discuss the TWO statements used by SQL to manage users. [4 Marks]

[4 Marks]

QUESTION FOUR FOUR [20 MARKS]

- a) What is database administration? [2 Marks]
- b) With the aid of an example in each case distinguish between binary and shared locks in current processing [4 Marks]
- c) Outline four types of database threats a database administrator is likely to encounter [4 Marks]
- d) Describe five principle functions of a database administrator [5marks]
- e) What is given processing? Briefly explain the five steps involved in given processing as used in query processing as used in RDBMs [5marks]

QUESTION FIVE [20 MARKS]

- a) Explain the different phases transaction processing. State with the help of a detailed diagram [5marks]
- b) Discuss the importance of the following components of a database [8 Marks]
- i) Recovery management
 - ii) Security management
 - iii) Transaction management
 - iv) Concurrency control
- c) Define the term deadlock and outline the two main methods of dealing with a deadlock problem. [7 Marks]