KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR THREE SEMESTER ONE EXAMINATIONS

FOR THE DEGREE IN
INFORMATION TECHNOLOGY

COURSE CODE : BIT 316

COURSE TITLE : DATABASE ADMINISTRATION

DATE: 16/12/2019 TIME: 8.00 AM-10.00 AM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

a. List and explain **Three** basic security tasks performed by a DBA [6 Marks]
b. What is a threat in database security? Describe the various threat points in a typical database environment [10 Marks]
c. Explain the following concepts in transaction management [8 Marks]
   i. 2PL
   ii. Phantom problem
   iii. Serial schedule
   iv. Non-serial schedule
d. What is the role of a transaction Log? What type of information is stored on a transaction log? [6 Marks]

QUESTION TWO [20 MARKS]

a. Explain the role of a scheduler in concurrency Control [2 Marks]
b. Performance of a typical DBMS is constrained by three main factors. Discuss [6 Marks]
c. Several problems can halt the normal operation of an oracle database or affect database operations. Discuss the failures that will cause data loss and typically require DBA's intervention and data recovery. [6 Marks]
d. Explain different types of privileges that a user can be given to ensure database security [6 Marks]

QUESTION THREE [20 MARKS]

a. Why does a DBMS interleave the actions of different transactions instead of executing transactions one after the other? [4 Marks]
b. To ensure data integrity, the database management system should maintain the transaction properties. Briefly describe these properties [8 Marks]
c. Discuss the pessimistic approaches of concurrency control [8 Marks]

QUESTION FOUR [20 MARKS]

a. What is concurrency control? [2 Marks]
b. Explain some of the potential problems that may occur as a result of concurrent execution of transactions [6 Marks]
c. Differentiate between the following terms;
   i. Physical backup and Logical back up [2 Marks]
   ii. SQL performance tuning and DBMS performance tuning [2 Marks]
   iii. Rule based optimizer and Cost based optimizer [2 Marks]
d. Briefly describe the three phases used to process a query [6 Marks]

QUESTION FIVE [20 MARKS]

a. What is the WAL property, and why is it important? [3 Marks]
b. Explain the facilities that a DBMS should provide to assist in data recovery [8 Marks]
c. Briefly describe the three main techniques used to recover a database to its consistent state [9 Marks]