STRATHMORE UNIVERSITY
FACULTY OF INFORMATION TECHNOLOGY
MASTER OF SCIENCE IN INFORMATION SYSTEMS SECURITY
END OF SEMESTER EXAMINATION
MST 8302 - ENTERPRISE SECURITY

DATE: 19 April, 2018   **Time: 2 Hours**

Instructions
1.   This examination consists of **SEVEN** questions.
2.   Answer **all** the questions.

Questions

1. Describe IT security concepts of Confidentiality, Integrity, Availability, and Non-repudiation. Demonstrate these concepts on an example.   (**8 Marks**)

2. Describe three different strategies for mapping of Application and Database-level Identities (i.e., the mapping of application users to database users). What are their advantages and disadvantages?   (**5 Marks**)

3. Describe three different strategies on where Authentication and Authorization (AA) of a user should be performed (i.e., AA at application/database levels; both AA at one of theses levels, as well as each of AA at different levels). What are advantages and disadvantages of these strategies? Also describe the concept of a "proxy user" in the case of Authentication at the application level and Authorization at the database level strategy.   (**10 Marks**)

4. What are goals and issues in securing Statistical Databases? Describe at least one technique/approach to implement the security in a statistical database.   (**7 Marks**)

5. What is the purpose, advantages and disadvantages of data encryption at application, database, and operating system levels? Provide examples of data that should be encrypted at each of these levels.   (**6 Marks**)

6. Describe how SQL Data Manipulation Language operations can be audited on a particular table. Provide an Entity-Relationship Diagram of the original table and new columns and tables created to record audit trails. Explain also how these new columns and tables will be filled with data on audited actions.   (**9 Marks**)

7. Explain the Cross-site Scripting attack concept. How vulnerabilities to this attack can be identified in an information system with a web-based user interface? How to prevent this types of attacks?   (**5 Marks**)