DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

University Examinations 2014/2015

**SECOND YEAR SEMESTER II EXAMINATION FOR THE DEGREE OF
BACHELOR OF CRIMINLOGY AN DSECURITY STUDIES**

BSM2419: DATA MINING

DATE: 4TH SEPTEMBER 2015   **TIME: 8.30AM – 10.30AM**

Instructions: Answer Question 1 and Any Other Two.

QUESTION ONE

a) Distinguish the following
   i.   Data mining and Knowledge Discovery in Databases
   ii.   Clustering vs Classification
   iii.   Descriptive Data Mining vs Prescriptive Data Mining   (6 Marks)

b) Describe the steps involved in data mining when viewed as a process of knowledge
   discovery.   (6 Marks)

c) Discuss three ways in which data mining can aid crime investigations for Juvenile
   abuse cases   (6 Marks)

d) Describe four tools and techniques that can be applied in data mining for pre-crime
   and post-crime investigation.   (8 Marks)

e) With the aid of a diagram describe the data mining architecture.   (4 Marks)

QUESTION TWO

a) State and explain five sources of data to be mined for fraud detection. (10 marks)

b) Enumerate three classes of schemas that are popularly used for modeling data
   warehouses.   (3 marks)

c) Discuss the major components of a data warehouse.   (7 Marks)

QUESTION THREE

a) Briefly describe the following *advanced database systems* and applications:
   i.   spatial databases,
   ii. multimedia databases,
   iii. The World Wide Web.   (6 Marks)

b) The Two Crows process model involves a list steps essential for successful data mining. Discuss the basic steps defined by this model.
                                                                            (14 Marks)

QUESTION FOUR

a) Highlight four issues in data mining.   (4 marks)

b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.   (4 Marks)

c) Explain any three data mining algorithms used to mine data.   (6 Marks)

d) Explain how the following functionalities are used in data mining
   i.   Classification
   ii. Associate analysis
   iii. Outlier analysis.   (6 Marks)

QUESTION FIVE

a) Distinguish the following in relation to data warehouses
   i.   Operational data store and data mart
   ii. Indexes and views
   iii. Unit testing and system testing   (6 Marks)

b) Explain three benefits of OLAP   (6 Marks)

c) Discuss four motivations of crime that can be explored in a data mining exercise to solve a criminal incident   (8 Marks)