**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2014/2015**

**YEAR 1 SEMESTER II EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**BIT 2112: SYSTEM ANALYSIS AND DESIGN**

**DATE: APRIL 2015 TIME: 2 HOURS**

**INSTRUCTIONS:**

* **Answer Question One and Any Other Two Questions**
* **Start each question on a new page clearly indicating the question number and complete the question grid on your answer booklet**

**QUESTION ONE (30 MARKS) -COMPULSORY**

1. Explain in details system development tools and techniques (4marks)
2. Explain the DFD components (4marks)
3. Differentiate between entity and attributes (4marks)
4. Give five data and information gathering techniques (3marks)
5. Describe the user interface design principles? (5marks)
6. Define the terms superkey, candidate and primary key (3marks)
7. Give three reasons why DFDs are the method of choice over technical description (3marks)
8. Give and explain briefly the design strategies (4marks)

**QUESTION TWO (20marks)**

1. i. Describe minimum and maximum cardinality and draw an example of an ERD depicting them. (4marks)

ii. Give and explain the different types of cardinality ratios (6marks)

1. i. Define the terms Entity, Attributes, Relationships and draw an ERD based on the definitions given. (5marks)

ii. Describe the two types of software process model. (2marks)

iii. Briefly explain the support phase. (3marks)

**QUESTION THREE (20 marks)**

1. From the following description draw an ERD depicting the entities, attributes and relationships;

A university consists of a number of departments. Each department offers several courses. A number of modules make up each course. Student enroll in a particular course and take modules towards the completion of that course. Each module is taught by a lecturer from the appropriate department, and each lecturer tutors a group of students. (6marks)

1. One to one relationships are redundant, with the help of an example explain how to remove that redundancy. (4marks)
2. Describe total participation and partial participation of an entity set (4marks)
3. Explain in details the waterfall model, its strengths, weaknesses and when to use it. (6marks)

**QUESTION FOUR (20 marks)**

1. i. Define Normalization. (2marks)

ii. Explain the rules of normalization with the help of an example 1NF, 2NF and 3NF only (4marks)

iii. Differentiate between simple and composite attributes (4marks)

1. i. Define a system (2marks)

ii. Define the term feasibility and give its four types (4marks)

iii. Define JAD and RAD (4marks)