KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS
MAIN CAMPUS

FIRST SEMESTER, 2019/2020 ACADEMIC YEAR

EXAMINATION FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE, BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY, BACHELOR OF BUSINESS INFORMATION TECHNOLOGY, BACHELOR OF MANAGEMENT INFORMATION SYSTEMS, BACHELOR OF SCIENCE IN SECURITY AND FORENSICS, BACHELOR OF SCIENCE IN TELECOMMUNICATIONS

COMP 320: OBJECT ORIENTED ANALYSIS AND DESIGN

STREAM: Y3S2 **TIME: 9:00-11:00AM**

EXAMINATION SESSION: SEP-DEC **DATE: 6/12/2019**

VENUE:"AUDITORIUM **COPIES: 350**

INSTRUCTIONS TO CANDIDATES

1. **Answer Question 1 and any othertwo questions in the answer booklet provided.**
2. **Do not write on your question papers. All rough work should be done in your answer booklet.**
3. **Clearly indicate which question you are answering.**
4. **Write neatly and legibly.**
5. **Edit your work for language and grammar errors.**
6. **Follow all the instructions in the answer booklet**

SECTION A:(Compulsory) TOTAL MARKS FOR THIS SECTION IS 30.
QUESTION ONE (30 MARKS)

1. a) From the following observations, draw a class diagram and show the relationships that exist between the classes and objects.

    i. A Tiger is a kind of Big Cat.
    ii. A Civet is a (different) kind of Big Cat.
    iii. Spotted Civets and Striped Civets are both kinds of Civets.
    iv. A paw is a part of both kinds of Big Cats.
    v. Sparrows eat certain pests such as ticks, which may be infesting certain kinds of Big Cats.

    (6 Marks)

    b) Explain the three most contributions to the foundation of the object model. (6 Marks)

    c) Explain the minor elements of the Object Model in detail. (6 Marks)

    d) Write a note on the following paradigms of programming.

    i. Rule Oriented (2 Marks)
    ii. Procedure Oriented (2 Marks)
    iii. Constraint Oriented (2 Marks)
    iv. Logic Oriented (2 Marks)

    e) Explain the dimensions I which an object can be defined in OOAD in detail. (4 Marks)

SECTION B. TOTAL MARKS FOR THIS SECTION IS 40.
ANSWER ANY TWO QUESTIONS FROM THIS SECTION. EACH QUESTION IN THIS SECTION CARRIES 20 MARKS.

QUESTION TWO (20 MARKS)

a) Explain the following relationships between classes.

i. Aggregation (3 Marks)
ii. Association (3 Marks)
iii. Generalization (3 Marks)
iv. Metaclass (3 Marks)

b) While a system should be built with a minimum set of unchangeable parts and whose parts should be as general as possible, explain the metrics we use to measure the quality of an abstraction. (6 Marks)

c) Explain the concept of Cardinality and its types. (2 Marks)

QUESTION THREE (20 MARKS)

a) An object in software takes up some amount of space and exists for a particular amount of time. Discuss what the spectrum of object persistence encompasses. (8 Marks)

b) You are the system administrator of Kabarak University, explain with the aid of a use case diagram a system how you would develop an online student registration system. (8 marks)

c) Explain the purpose of Analysis and Design in UML . (4 marks)

QUESTION FOUR (20 MARKS)

a) An abstraction focuses on the outside view of an object and so serves to separate an object's essential behaviour from its implementation. Deciding upon the right set of abstractions for a given domain is the central problem in object-oriented design. Explain any four such **Abstractions.** (8Marks)

b) Differentiate between Attributes and Associations. (2 Marks)

c) Discuss the concept of Package Diagrams and explain their use. Use detailed illustrations. (6 Marks)

d) What are State Diagrams in UML? What do we use them for? (4 Marks)

QUESTION FIVE (20 MARKS)

a) Explain the use of Deployment Diagrams and their uses? (6 Marks)

b) Discuss why you would use a Component Diagram in system specification. Explain the elements of a Component Diagram. (6 Marks)

c) Draw an activity diagram for an M-Pesa money transfer from your phone to another. In your diagram show how the following elements are applied: merge, branch, join, fork and constraints. (8 Marks)