TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATIONS FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT 13S J-FT/BTIT 14S S-EV)

BIT 2214: OBJECT ORIENTED ANALYSIS & DESIGN

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*
This paper consists of **FIVE** questions.
Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

a) Briefly explain the meaning of the following terms as used in object oriented and design:
  (i) Object oriented analysis
  (ii) Object oriented design **(4 marks)**

b) Distinguish between the following object oriented concepts:
  (i) Class and object
  (ii) Attribute and operation
  (iii)   Aggregation and association **(6 marks)**

c) Suppose we wish to model an application for registering students in a University academic semester. Identify:
  (i) THREE classes for the model **(3 marks)**
  (ii) At least THREE attributes for each class **(9 marks)**

d) Distinguish between static dynamic model then give TWO examples of UML diagrams for each
(8 marks)

Question Two

a) Using the diagram shown below, distinguish the term: **(15 marks)**
    (i) Polymorphism
    (ii) Inheritance
    (iii)   Interface
        Draw ( )
        Get Area ( )

b) Briefly explain the type of relationships indicated on the diagram in (2a) above **(5 marks)**

Question Three

a) For systems with characteristics describe below, indicate whether object-oriented design is suitable (appropriate) or not:
    (i) Management information systems (mostly queries)
    (ii) Event driven systems
    (iii)   Multimedia data handling (Presentations)
    (iv) Scientific calculations (e.g. satellite orbit calculations) **(4 marks)**

b) Draw a use-case diagram that models the following small system. Define your use case to show at least one <<extend>> and at least one <<include>> relationship.

John is an enthusiastic gardener who earns money by doing gardening work for his neighbors. John buys the materials (fertilizers, mulch e.t.c) that he needs and charges his customers for both labour and materials. Some customers make appointments when they want work done and pay when John completes the work. Some customers set up a schedule (usually weekly) for regular work and pay when John sends them a monthly invoice for work done during the month.
(16 marks)

Question Four

a) Briefly explain the term "modeling" as used in object oriented analysis and design **(4 marks)**

b) Briefly explain the main principles of modeling **(8 marks)**

c) Distinguish between the following object oriented concept:
    (i) Abstraction and Encapsulation
    (ii) Inheritance and polymorphism **(8 marks)**

Question Five

a) Using example of computer as an object oriented system. Identify the following concepts:

(i) Interface
(ii) Abstraction
(iii) Encapsulation   **(12 marks)**

b) Explain the meaning of the following terminologies   **(8 marks)**
(i) Element
(ii) Relationship
(iii) Diagram
(iv) UML