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**University Examinations 2014/2015**

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF COMPUTER TECHNOLOGY AND BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

AND

THIRD YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

**CIT 3276: OBJECT ORIENTED SYSTEMS AND DESIGN**

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

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Citing an example, discuss the following terms in relation to an object:
2. Member variables
3. Member functions
4. Identity
5. Instance
6. Monitoring and control (6 Marks)
7. Differentiate between the following terms:
8. Object oriented system analysis and design and structured system analysis and design
9. Object Oriented analysis and object oriented design (4 Marks)
10. Consider the scenario given below and identify the actors and the use cases depicted in the system

*When an application enters the license plate application number the system retrieves the information related to it, the system then displays the information* (4 Marks)

1. In a library scenario identify any three objects and for each object identify an attribute and a method (6 Marks)
2. Discuss the distinctions between deployment and component diagrams in object oriented analysis modeling (4 Marks)
3. State which class names you would place each of the following objects giving justifications to your classification
4. Chair
5. Car
6. Java programming language (6 Marks)

**QUESTION TWO (20 MARKS)**

1. Discuss what you understand by the term inheritance and explain any three advantages of inheritance (6 Marks)
2. State and discuss the roles of any three UML diagrams used in Object Oriented Analysis and Design (6 Marks0
3. Consider the following scenario and draw an activity diagram:

*When Jane gets to her house after work, she performs various activities. She gathers her laundry. If there is enough detergent in the house, she washes her clothes using her washing machine. If there isn’t enough detergent in the house, she takes her laundry to a nearby laundry service (who does instant dry cleaning), gets her now washed laundry form the laundry service, buys detergents and goes back to the house. She then fixes supper. She washes the utensils even as she cleans the house. She then has her supper* (8 Marks)

**QUESTION THREE (20 MARKS)**

1. Define UML and discuss any two goals of UML (4 Marks)
2. Consider the following scenario and draw a use case diagram.

*A golf club wants to develop software to support a number of its activities. The club secretary will use the system to manage membership details, which includes adding and removing members. To become a member on application has to be recommended by two current members. The secretary can add tournaments as well as print tournament results. Member of the club can enter tournaments if they wish and can view results* (6 Marks)

1. Discuss any three reasons why you think UML is best suited for modeling (3 Marks)
2. Discuss any three components of statechart diagram using an example (3 Marks)
3. Discuss any two types of relationships in UML (4 Marks)

**QUESTION FOUR (20 MARKS)**

1. Citing examples, discuss in detail any five major concepts of an object oriented system (10 Marks)
2. Consider the following scenario and model it using a well labeled class diagram to capture the classes, relationship and multiplicities

*Mr. Orwa has been consulted to come up with a library system for cataloguing books. The catalogue is o assist student retrieve books form the shelves in a fast and efficient way. The catalogue stores the name of the book, the author, the date of publication and the shelf where the book is located in terms of the floor and categorizations* (6 Marks)

1. Discuss any four roles of robust analysis (4 Marks)

**QUESTION FIVE (20 MARKS)**

1. With the use of UML diagram representation explain the three compartments of the class model (4 Marks)
2. With the use of examples explain the following stereo types as applied in use case analysis diagram
3. <<includes>>
4. <<extends>> (4 Marks)
5. Briefly describe the phases in the unified process (4 Marks)
6. Consider the following scenario and design a collaboration diagram that best suits the scenario:

*A customer walks into a baker’s shop and asks the baker what kind of loaves she has for sale. The baker looks under the counter and tells the customer that she has two white loaves and one whole meal loaf. The customer says that he would like to buy the whole meal loaf. Now the business transaction takes place: the baker wraps the loaf and offers it with a request for payment, the customer gives the baker some money; the baker gives the customer some change. The customer leaves, satisfied* (8 Marks)