



**MASENO UNIVERSITY**

**UNIVERSITY EXAMINATIONS 2017/2018**

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

**CITY CAMPUS**

**CIT 210: OBJECT ORIENTED ANALYSIS AND DESIGN**

Date: 14<sup>th</sup> June, 2018

Time: 5.00 - 8.00pm

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INSTRUCTIONS:

- Answer Question ONE and any other TWO.



### **QUESTION ONE**

- a) Differentiate between Object Oriented Analysis and Object Oriented Design [ 4 Marks]
- b) Illustrate using an example an Inheritance relationship [ 3 Marks]
- c) List and explain the main Structural things in UML [4 Marks ]
- d) Draw and explain a use case diagram of when a customer interacts with an ATM(automatic teller machine). [5 Marks ]
- e) Explain the following concept of object oriented programming: [4 Marks ]
  - i. Polymorphism
  - ii. Encapsulation
  - iii. Message passing
  - iv. Data abstraction
- f) Briefly describe the main phases of Rational Unified Process methodology. [6 Marks]
- g) Define the following: [4 Marks ]
  - i. Class
  - ii. Object
  - iii. Behaviour
  - iv. Actor

### **QUESTION TWO**

- a) Differentiate between the following [ 3 Marks ]
  - i. State machines.
  - ii. Activity diagrams.
  - iii. Interaction diagrams.
- b) Enumerate and explain any four primary purposes of use case [4 Marks ]
- c) In object-oriented modeling, there are three kinds of relationships that are most important. Illustrate and Discuss. [6 Marks ]
- d) Describe any four views used with UML. [4 Marks ]
- e) List any three differences between an object and class diagram [3 Marks ]

### **QUESTION THREE**

- a) Describe the functions of the following diagrams: [ 4 Marks ]
  - i. Collaboration diagram
  - ii. Package diagram
- b) UML provides FIVE stereotype that apply to package diagrams. List and briefly explain them [ 5 Marks]

- c) Differentiate between aggregation and generalization relationship [ 4 Marks]
- d) (i) list and explain all UML notations used in the following
  - (a) Sequence diagram [2 Marks]
  - (b) Activity diagram [ 2 Marks]
- (ii) Using a suitable example draw a sequence diagram [4 Marks]

#### **QUESTION FOUR**

- a) List the purpose of Object Oriented Analysis [ 4 Marks ]
- b) Give any four reasons why we Model [4 Marks ]
- c) Illustrate and describe component diagram [ 5 Marks ]
- d) Using an example discuss functions and elements of State chart diagram [5 Marks]
- e) Explain the purpose of *stereotype* in UML [ 2 Marks ]

#### **QUESTION FIVE**

- a) Explaining the following types of models, giving an example diagram for each one of them: [ 6 Marks ]
  - i. static models
  - ii. behavioural models
  - iii. dynamic models
- b) Given the following scenario, draw a sequence diagram. [5 Marks]  
Steps:
  - 1) Applicant requests to track status of a license application
  - 2) System displays the logon form
  - 3) Applicant enters the logon information
  - 4) Applicant submits the logon information
  - 5) System validates the applicant
  - 6) System displays the form to enter the tracking number
  - 7) Applicant enters the tracking number
  - 8) Applicant submits the license number
  - 9) System retrieves the license information
  - 10) System displays the license information
- c) Define the term Pattern using an example [ 3 Marks]
- d) Using a suitable examples list and illustrate all the components of: [ 6 Marks]
  - i) State chart diagram