

MACHAKOS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
SUPPLEMENTARY EXAMINATION FOR DEGREE IN
BSC. INFORMATION TECHNOLOGY Y3
COURSE TITLE: OBJECT ORIENTED DESIGN
COURSE CODE: SIT 309

Instructions: Answer Question **ONE** and any other **TWO** Questions.

Question One [Compulsory, 30 Marks]

- a) Specify when each of the two different accessibilities (public, private, protected) should be used (6 marks)
- b) Explain the meaning of polymorphism. (2 marks)
- c) Explain what a design pattern means. (2 Marks)
- d) Outline any **FOUR** characteristics of object oriented systems (8 Marks)
- e) Read through the following case and draw a use case diagram.
In placement management system, placement officer does the following
• Identifies vacancy for placement
• Identifies an intern
• Assigns intern to a vacancy (6Marks)

Question Two [Optional, 20 Marks]

- a) Briefly explain what is meant by object oriented approach to systems development. (6 Marks)
- b) Differentiate between object oriented analysis and object oriented design (6 Marks)
- c) Describe any three functions of a sequence diagram (6 Marks)
- d) Name four examples of object oriented programming languages (2 Marks)

Question Three [Optional, 20 Marks]

- a) Briefly explain the following components of a class diagram.
 - i. Class name
 - ii. Association
 - iii. Inheritance
 - iv. Attributes (8 Marks)
- b) Explain three diagrams used during system design for object oriented systems.

- (6 Marks)
- c) Differentiate between object and class diagrams. (2 Marks)
- d) Read the following narration and draw an object diagram.
- A bank has many branches. In each zone, one branch is designated as the zonal head office that supervises the other branches in that zone.
 - Branch can have multiple accounts and loans. An account may be either a savings account or a current account.
 - A customer may open both a savings account and a current account.
 - However, a customer must not have more than one savings account or current account. A customer may also procure loans from the bank. (4 Marks)

Question Four [Optional, 20 Marks]

- a) Name and explain the four main concepts of the dynamic modeling in object oriented analysis and design. (8 Marks)
- b) Describe the four features of message passing in object oriented and design (8 Marks)
- c) With an aid of a diagram, describe the meaning of the two terms (generalization and specialization) used in inheritance. (4 Marks)

Question Five [Optional, 20 Marks]

- a) Suppose a person is taking a taxi from place X to place Y. Draw a state transition diagram depicting the states from X to Y. (6 marks)
- b) Define the following terms as used in object oriented design.
- i.Event (2 Marks)
 - ii.Transition (2 Marks)
 - iii.Activity (2 Marks)
 - iv.Scenario (2 Marks)
- c) Name and explain three advantages of using polymorphism. (6 Marks)

