



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMSTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 208: OBJECT ORIENTED ANALYSIS AND DESIGN

DATE: 16/8/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

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

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Write short notes on the following;
 - i) Object oriented analysis (3 marks)
 - ii) Object oriented design (3 marks)
- b) 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. (6 marks)
- c) Briefly explain what is meant by object oriented approach to systems development. (6 marks)
- d) Explain ANY three diagrams used during system design for object oriented systems. (6 marks)
- e) Outline the steps followed in object modelling phase of software development. (6 marks)

QUESTION TWO (20 MARKS)

- a) Write short notes on;
 - i) object model (4 marks)
 - ii) dynamic model (4 marks)
 - iii) functional model (4 marks)

- b) Relate the traditional system approach of system design to the object oriented analysis and design. (6 marks)
- c) List out two types of events (2 marks)

QUESTION THREE (20 MARKS)

- a) Briefly explain the following components of a class diagram.
 - i) Association (3 marks)
 - ii) Inheritance (3 marks)
 - iii) Attributes (3 marks)
- b) Describe the following UML diagrams;
 - i) State diagram (3 marks)
 - ii) Activity diagram (3 marks)
 - iii) Component diagram (3 marks)
- c) Name four examples of object oriented programming languages (2 marks)

QUESTION FOUR (20 MARKS)

- a) Draw notations for the following types of relationships;
 - i) Association (2 marks)
 - ii) Realization (2 marks)
 - iii) Inheritance (2 marks)
 - iv) Aggregation (2 marks)
- b) Using examples differentiate between object and class diagrams. (3 marks)
- c) With an aid of a diagram, describe the meaning of the two terms (generalization and specialization) used in inheritance. (6 marks)
- d) List THREE advantages of using object oriented analysis and design. (3 marks)

QUESTION FIVE (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) Draw sequence diagram for the following case study; (6 marks)

- The customer can log into the order management system
- The order system has an option of special order or normal order
- The customer can order ANY one of the two mentioned orders
- The order system updates the order
- The customer confirms the order
- The order system sends the order to the customer
- The customer receives the order

