



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 200: OBJECT ORIENTED PROGRAMMING II

DATE: 18/8/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) OOP can be implemented in many languages. Explain THREE reasons why as a programmer you would choose Java. (6 marks)
- b) A program is required to capture student's details in a university. The program should allow students to do the following Register units, check results. Write a java code snippet showing class and two objects of that class that accesses the attributes of the student class. (6 marks)
- c) Explain the difference between generalization and specialization as used in OOP. (4 marks)
- d) Distinguish between terms single inheritance and multiple inheritance. Support your answer with an example. (6 marks)
- e) Explain FOUR common Java APIs. (8 marks)

QUESTION TWO (20 MARKS)

- a) Explain TWO limitations of interface in multiple inheritance. (4 marks)
- b) Explain the term method overloading and write a Java code snippet to support your answer. (4 marks)
- c) Discuss FOUR access specifiers used in Java. Write a Java Code where necessary. (8 marks)
- d) Define the term polymorphisms and state two benefit in OOP. (4 marks)

QUESTION THREE (20 MARKS)

- a) Explain key terms used in exception handling in Java (6 marks)
- b) Using exception handling elements in Q3 (a) write a program to divide two numbers. The program should be able to address arithmetic errors such as division by zero. (6 marks)

- c) Giving relevant examples differentiate between abstract and concrete classes in OOP. (8 marks)

QUESTION FOUR (20 MARKS)

- a) File manipulation is one of the functions of an OOP program. Write a sample code that will create a file based on the condition. If it does not exist the file is created, otherwise it exists. (8 marks)
- b) Explain how you would add a subclass in a class hierarchy. (4 marks)
- c) Describe FOUR elements of AWTs in Java GUI. (8 marks)

QUESTION FIVE (20 MARKS)

- a) Giving examples explain THREE components of collection interface in JAVA. (6 marks)
- b) You are given a number of items mango, bananas, oranges, pineapples. Write a Java Code to implement the Array List class to list these items. (6 marks)
- c) Explain TWO ways of implementing changes in all Subclasses during inheritance. (4 marks)
- d) Explain how inheritance contributes to reusability in OOP. (4 marks)