(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

IN

COMPUTER SCIENCE

COURSE CODE: BCS 366

COURSE TITLE: ADVANCED JAVA

DATE: 15/12/2022   **TIME:** 8:00-10:00 PM

INSTRUCTIONS TO CANDIDATES

Answer **Question ONE (1)** and any other **TWO**

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

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SECTION A: COMPULSORY QUESTION   {30 MARKS}

QUESTION 1

a) Answer the following with reference to Java programming.

    i.   Define an Exception.   **(2 Marks)**

    ii.   Explain the meaning of Exception Handling.   **(2 Marks)**

    iii.   Outline the primary advantage of handling exceptions in a program.   **(2 Marks)**

b) Describe a content pane and hence explain the method **getContentPane()**.**(4 Marks)**

c) Difference between interface and an abstract class as applied in java.   **(4 Marks)**

d) Show how can register the action listener interface and associate it with a button event, to open a new window. Say your button name is **btnopen**.   **(5 Marks)**

e) Explain the concept of polymorphism and hence outline any three advantages.   **(5 Marks)**

f) Explain a layout manager and describe any four types of layout managers available in java.

    (6 Marks)

SECTION B: *ANSWER ANY TWO QUESTIONS*   *{20 MARKS EACH}.*

QUESTION 2

a) Write a program that will create the GUI in figure x. where "File, Navigate, Run and Help" are items on the menu bar; labels and corresponding text fields; and Save, Open and Reset are Buttons. If the close button is to the clicked the window should close. You may need more than one panel and different layout managers. **(10 Marks)**
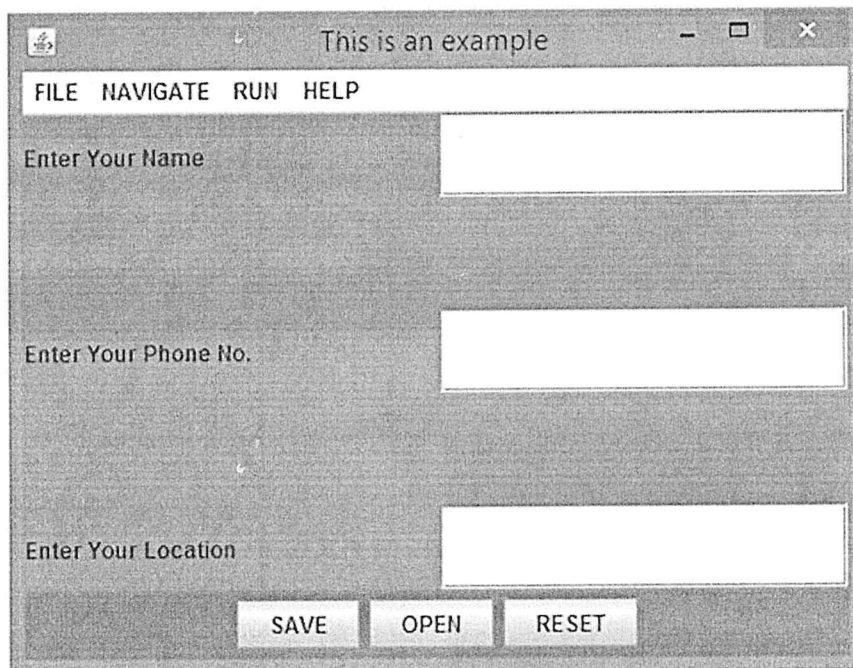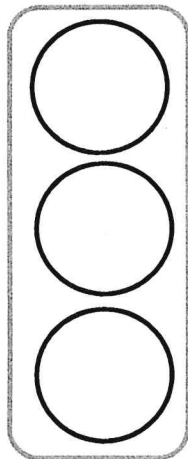
figure x.

b) Define a thread, and hence describe the stages it goes through in its life cycle. **(10 Marks)**

QUESTION 3

a) MMUST student union require a system to help organize the fresher's party happening soon. They require a simple system that will register but restrict students aged below 20 years to register for the party. The system should ask for student name and age. Write a java program that will throw an exception if age below 20 years is entered. The program should display the student details and grant acceptance message, otherwise throw an exception with a regret message. The program should not terminate prematurely. **(10 Marks)**

b) Use a suitable program to illustrate or show the concept of Dynamic polymorphism within the confines of java programming. Comment your program. **(10 Marks)**

QUESTION 4

a) Device a java program that would draw the traffic light interface. When run, the round shapes should be coloured -from top **Red, Orange** and **Green** respectively.; explain which containers you used in your design. **(12 Marks)**

b) Device a Program that stores six double values in a Two-Dimension array and computes the total and average of the numbers, the program should prompt the user for input. **(8 Marks)**

QUESTION 5

a) The following describes basic requirements for a bank account program. The program should have savings account, fixed deposit account and current account as types of accounts the banks offer.

- **Savings account** allows a member to deposit, withdraw, check balance
- **Fixed deposit account** allows a member to deposits and over a specified duration he gets interest on the deposit.
- **Current account** allows members to get their salary through.

Device a GUI based java program that will at minimal simulate the behavior specified, data should be saved in a database.

Required:

Provide appropriate GUI, and apply the concepts of polymorphism (overloading and overriding) in your solution.

(20 Marks)

End of Exam