



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH SCIENCES AND TECHNOLOGY

DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE : MIS 108

COURSE TITLE : DATA STRUCTURES AND ALGORITHM
DESIGN

DURATION : 3 Hours

LEVEL : 1.2

DATE : SEMESTER 2 2021 16 FEB 2022

INSTRUCTIONS TO CANDIDATES:

1. Answer all questions.
2. The number of marks for each question or part question is shown in brackets []

Question 1

Using examples, describe how a stack and linked list store and retrieve data. [12]

Question 2

Describe the process of sorting the following values in ascending order using quick sort algorithm. [11]

Peach, Mango, Apple, Orange, Avocado

Question 3

Show how Binary Search can be used to search for 31 from the following list. [10]
10, 31, 5, 25, 1, 22, 14, 7

Question 4

Write down the linear search algorithm. [12]

Question 5

- (a) Giving examples, distinguish static and dynamic data structures. [4]
- (b) Write a pseudo code with a 2 dimensional array to store student marks of test 1 and test 2 for 3 students. [10]

Question 6

Draw a flowchart that accept ice cream flavor and determine the price for the ice cream. Amount to be paid will be calculated by multiplying the price by quantity. The flavors cost is \$0.60 for Vanilla, \$0.70 for Strawberry and \$1.00 for chocolate flavor. [10]

Question 7

Write a program to accept total sales amount then accept payments until the amount is zero. [6]

Question 8

Below is a pseudo code.

Start

Total = 0

Do While Total < 200

 Enter Number

 Total = Total + Number

End While

Display Total

Stop

Use the following values to dry run the pseudo code. [13]

40, 34, 51, 13, 17, 25, 32, 11

Question 9

(a) Draw a binary tree to store the following elements. [9]

Fish, Cat, Ant, Fly, Hen, Goat, Bat, Cow, Pig

(b) Perform pre-order, in-order, post-order traversal on the tree. [9]