SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Jumail-0034

Higher National Diploma in Information Technology

First Year, Second Semester Examination – 2021

HNDIT2022- Software Development

Instructions for Candidates:	No. of questions: 06
Answer any five (5) Questions	No. of pages :02
All questions carry equal marks.	Time : 03 hours

Question 1

I. Define Computer program? (2 marks)

II. State the usage of loops in computer programming? (3 marks)

III. State whether the following statements are correct or incorrect (5 marks)

a) Top-down design focuses on the tasks to be done —

b) An Object is a description of a group of similar things —

c) The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called a recursive function

d) An algorithm is a set of unambiguous instructions for solving a problem or sub problem in a <u>finite</u> amount of time using an <u>infinite</u> amount of data

e) Defensive programming is the creation of code for computer software designed to avoid problematic issues before they arise and make the product more stable.

IV. Write algorithms to solve the problems given below.

    a) Swapping two numbers (5 marks)

    b) Find the minimum number among three numbers (5 marks)

[Total marks 20]

Question 2

I. What is linear data structure? (2marks)

II. Mention two examples for linear data structures. (2 marks)

III. State two reasons to use linked list over arrays. (4 marks)

IV. "Arrays are homogenous"? Do you agree with this statement? Justify your answer. (3 marks)

V. Write an algorithm to enqueue operation in Queue data structure. (5 marks)

VI. Mention an algorithm to pop operation (delete) in stack data structure. (4 marks)

[Total marks 20]

Question 3

I., What is the usage of RAD software model?   (3 marks)
II. State three examples of product documentation.   (3 marks)
III. State two differences between white box testing and black box testing?   (4 marks)
IV. State a difference between test scenario and test cases using an appropriate example.
                                                                       (6 marks)
V. State four major activities of Software quality assurance.   (4 marks)

[Total marks 20]

(handwritten margin note: user manual, technical specificas, API docs)

Question 4

I.   Describe three needs of system software.   (3 marks)
II. Name two different types of system software and describe the usage of each. (4 marks)
III. State a difference between best case efficiency and worst-case efficiency in an algorithm.
                                                                       (2 marks)
IV. Write an algorithm for selection sort.   (5 marks)
V.   Arrange the list shown below in ascending order using selection sort algorithm. (It is
     required to show the steps or passes).   (6 marks)
     9,13,8,6,15,20,10 ,   6, 8, 9, 10, 13, 15, 20

[Total marks 20]

Question 5

I.   What is meant by a Stream in file handling? State two types of Streams.   (4 marks)
II. State two good interface designing characteristics and three bad interface designing
     characteristics.   (5 marks)
III. Write an algorithm to represent linear search.   (5 marks)
IV. Mention the steps to be followed to find the key value 26 from the list shown below
     using binary search algorithm. (Clearly show the steps)   (6 marks)

     2,10,13,14,15,26,30   alo   2, 10, 13, 14, 15, 26, 30

[Total marks 20]

Question 6

Write short notes on the followings
     I.   public clouds   (4 marks)
     II. Fundamental data types   (4 marks)
     III. Sub Programs   (4 marks)
     IV. Subroutines and functions   (4 marks)
     V.   Agile model   (4 marks)

[Total marks 20]

(handwritten working at bottom):

1st ⟹	2	10	13	14	15	26	30
2nd ⟹	2	10	13	14	15	26	30
3rd ⟹	2	10	13	14	15	26	30
4th ⟹	2	10	13	14	15	26	30
5th ⟹	2	10	13	14	15	26	30

(handwritten note: last least element of the list is 26 in the 6th position and last position element is a larger)