Higher National Diploma in Information Technology

Second Year, Second Semester Examination – 2021

HNDIT2022- Software Development -Model Paper

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 (20 marks)

I. Define an Algorithm?
II. State the usage of if statement in computer programming?
III. Write algorithms to solve the problems given below.
   a) Gross pay depends on the pay rate and the number of hours worked per week. However, if you work more than 45 hours, you get paid time-and-a-half for all hours worked over 40. Write algorithm to compute gross pay given pay rate and hours worked.
   b) A number divisible by 2 is considered an even number, while a number which is not divisible by 2 is considered an odd number. Write pseudo-code to display first N odd/even numbers.
   c) Find the minimum number of given numeric array

Question 2 (20 marks)

I. State two differences between linear and non-linear data structure
II. Mention two examples for non-linear data structures.
III. State two differences between arrays and linked list
IV. Do you agree the statement "Arrays are heterogenous"? Justify your answer.
V. Write an algorithm to dequeue operation in Queue data structure.
VI. Mention an algorithm to push operation (insert) in stack data structure.

Question 3 (20 marks)

I. What is the usage of recursion function in programming?

II. What is software quality?
III. State the usage of Gray- Box testing
IV. Suppose you have been asked to check an input field that can accept maximum of 10 characters.
   State the test scenario and mention three test cases of the scenario given above.
V. Define automation testing

Question 4 (20 marks)

I.   Compare system software and application software.
II. State two usages of firmware.
III. What is average case efficiency in an algorithm.
IV. Write an algorithm to represent the insertion sort.
V. Arrange the list shown below in ascending order using insertion sort algorithm. (It is required to show the steps or passes).
     6,15,5,8,17,26,10

Question 5 (20 marks)

I.   What is file handling in computer programming? State two operations in file handling.

II. State user interface design process.
III. Write an algorithm to represent binary search.
IV. Mention the steps to be followed to find the key value 78 from the list shown below using binary search algorithm. (Clearly show the steps)
     5,16,45,69,78,99,102

Question 6

Write short notes on followings (20 marks)
   I.   Hybrid clouds
   II. Product documentation
   III. Procedures
   IV. Utility Software
   V. RAD model