

**Data Structures & Algorithms (DSA)**

Year 2/3 (2020/21), Semester 4/6

## SCHOOL OF INFOCOMM TECHNOLOGY

Diploma in Cybersecurity & Digital Forensics

Diploma in Information Technology

**TEST 1 Sample – SOLUTION DOCUMENT**

INSTRUCTIONS TO CANDIDATES:

1. Write your Student Number, Name and Module Group CLEARLY in the boxes provided below.
2. Provide your answers to the questions in the Test 1 paper in this document.
3. Save this file as "Test1 – s1234567 Solution.docx" where s1234567 is your student number.
4. Map to network drive: [**\\ictspace.ict.np.edu.sg\DSATest1\**](file:///\\ictspace.ict.np.edu.sg\DSATest1\)
5. Copy this solution file into the network drive.

**ictspace.ict.np.edu.sg > DSATest1 > group > studentID**

|  |  |
| --- | --- |
| **Student Number:** | **Seat Number:** |
| **Student Name:** | **Module Group:** |

**GRADE**

There are 3 questions. Answer ALL questions (100 marks).

Write your solutions to the questions in the space allocated for each question.

Question 1 – Solution (40 marks)

|  |  |
| --- | --- |
| (a) |  |
|  | (15 marks) |
| (b) |  |
|  | (15 marks) |
| (c) |  |
|  | (10 marks) |

Question 2 – Solution (35 marks)

|  |  |
| --- | --- |
| (a) |  |
|  | (10 marks) |
| (b) |  |
|  | (5 marks) |
| (c) |  |
|  | (15 marks) |
| (d) | To allow removal of later customers near the end of the queue, need an operation to remove customer from the back eg dequeueBack()  For those customers who need to be processed more quickly than others due to special condition, need an operation to add to the front of the queue  We need a double ended queue structure that can add/remove at both ends.  This is a deque queue. |
|  | (5 marks) |

Question 3 – Solution (25 marks)

|  |  |
| --- | --- |
| (a) |  |
|  | (5 marks) |
| (b) |  |
|  | (10 marks) |
| (c) |  |
|  | (10 marks) |

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