NATIONAL UNIVERSITY OF SINGAPORE

CS1231 – Discrete Structures

(Semester 1: AY2017/18)

ANSWER SHEET

Time Allowed: 2 Hours

INSTRUCTIONS TO CANDIDATES

1. This Answer Sheet consist of **SIX (6)** printed pages.

2. Fill in your **Student Number** <u>clearly</u> below with a pen.

3. You may write your answers in pencil.

STUDENT NUMBER:

A								

(Write your Student Number above legibly with a <u>pen</u>.)

FOR EXAMINER'S USE ONLY		
Questions	**Max.**	**Marks**
MCQs (Q1-15)	**30**	
Q16	**14**	
Q17	**14**	
Q18	**12**	
Total	**70**	

Section B (40 marks)

Q16. [14 marks]

(a) i.
[2]

$$x_1 + x_2 + x_3 = 10$$

(a) ii.
[2]

(a) iii.
[3]

(b).
[3]

Two consecutive positive integers are co-prime.

(c).
[4]

Pigeonhole Principle

Q17. [14 marks]

(a)
[3]

| | Postorder: F C E H D A B G |
| | Inorder: C F G E D H B A |

(b)

Dijkstra's algorithm

[2] (i) Shortest distance from *a* to *z* =

[4] (ii) Final *V(T)* = { *a*, , *z* }

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Q17.

(c)

[5]

You should not write longer than the space provided in the box, or mark will be deducted.

A pile of *n* stones.

(a)
[2]

$$f(1) =$$
$$f(2) =$$
$$f(3) =$$
$$f(4) =$$

$G_2 \not\cong G_3$

(b)
[2]

$\cong$ symmetry

(c)
[4]

2.5

2.6

2.7

2.8 (optional)

(d)
[4]

$x^n = e$