**NATIONAL UNIVERSITY OF SINGAPORE**

**CS1231 – DISCRETE STRUCTURES**

(Semester 1: AY2019/20)

**ANSWER BOOKLET**

Time Allowed: 2 Hours

**INSTRUCTIONS TO CANDIDATES**

1. This answer booklet consists of **SIX (6)** printed pages.
2. Fill in your Student Number **with a pen** **clearly** below. Do NOT write your name.
3. You may write your answers in pencil (2B or above).

**A**

**STUDENT NUMBER (fill in with a pen):**

|  |  |  |
| --- | --- | --- |
| For examiner’s use only | | |
| ***Question*** | ***Total*** | ***Marks*** |
| MCQs  (Q1-15) | 30 |  |
| Q16 | 10 |  |
| Q17 | 12 |  |
| Q18 | 20 |  |
| Q19 | 20 |  |
| Q20 | 8 |  |
| ***Total*** | **100** |  |

Section A: MCQs

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. |  | 2. |  | 3. |  | 4. |  | 5. |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. |  | 7. |  | 8. |  | 9. |  | 10. |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. |  | 12. |  | 13. |  | 14. |  | 15. |  |

MCQs total: /30

Section B:

16a. .

[2]

b. Base 9 representation of (53292)10.

[2]

c. A positive integer that has exactly 5 positive divisors.

[2]

d.

[2]

e.

[2]

Q16: /10

17. Partial order.

a.

[6]

b.

[6]

Q17: /12

18a. . b. Selecting children c. “I”, “CAN”, “DO”, “IT”

[2] [3] [4]

d. 3×3 grid

[3]

e. Conditional probability. Write your answers correct to 3 significant figures.

[8] (i) (ii) (iii)

Q18: /20

19a. b. Mark out the MST of the graph below.

20

30

5

7

22

12

8

28

18

13

28

25

28

16

10

30

22

23

28

9

15

26

10

4

[2] [4]

c. Draw the binary tree.

[4]

**A**

d. (i). (ii) What is ?

**000**

**001**

**101**

[2] [3]

(iii) What is ?

[5]

Q19: /20

20.

[8]

Q20: /8

**=== END OF PAPER ===**