NATIONAL UNIVERSITY OF SINGAPORE

CS2100 – COMPUTER ORGANISATION

(Semester 2: AY2017/18)

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).

STUDENT NUMBER (fill in with a pen):

A	**0**	**1**						

For examiner's use only		
Question	***Total***	***Marks***
Q1	10	
Q2	15	
Q3	20	
Q4	12	
Q5	15	
Q6	14	
Q7	14	
Total	**100**	

Write your answers in the box/space provided.

1a. [4]

1b. [3]

1c. [3]

F =

Circuit delay =

Q1: /10

2a. [10]

DA =

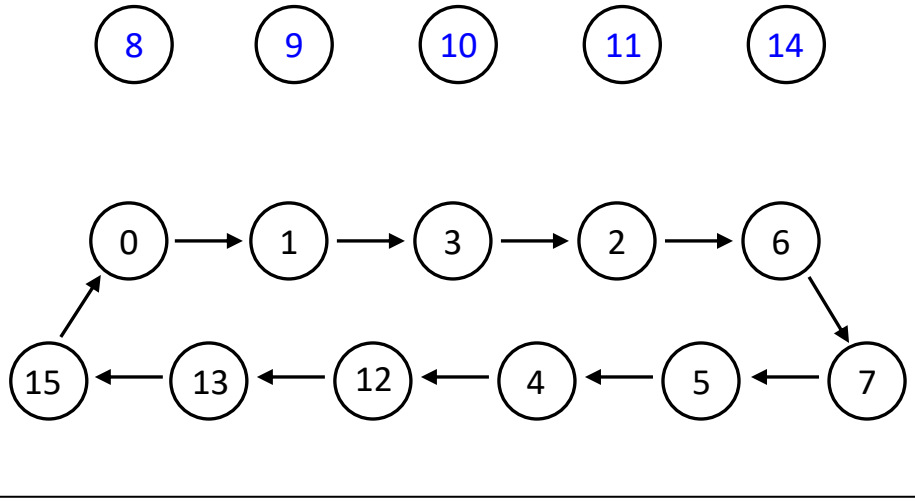
DB =

TC =

JD =

KD =

2b. [5]

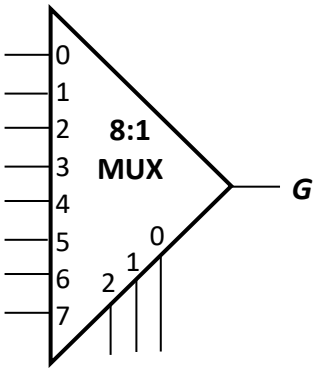


Q2: /15

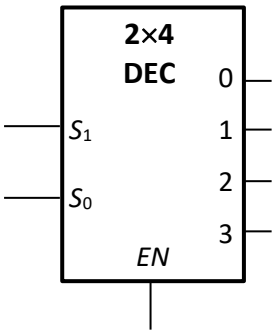
3a. [4]

F =

3b. [4]



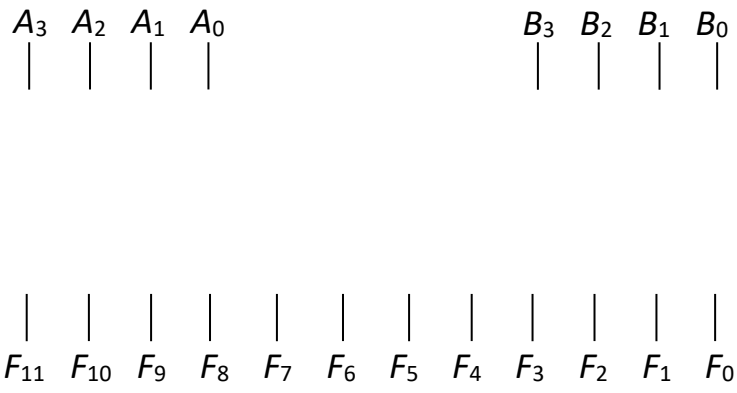
3c. [4]



3d. [8]

A				$5\times A$							
A_3	A_2	A_1	A_0								
0	0	0	0								
0	0	0	1								
0	0	1	0								
0	0	1	1								
0	1	0	0								
0	1	0	1								
0	1	1	0								
0	1	1	1								
1	0	0	0								
1	0	0	1								

Complete your circuit here.



Q3: /20

4a. [2]

Maximum total instructions =

4b. [3]

Stuck-at-0 fault at bit 6 of the instruction

4c. [3]

Stuck-at-0 fault at ALUSrc

4d. [4]

Adding bne instruction

Q4: /12

5a. [1]

5b. [4] Array *A*:

5c. [4]

5d. [2]

5e. [2]

5f. [2]

Q5: /15

6a. [2]

Minimum =

Maximum =

6b. [6]

6c. [3] _____ cycles

6d. [3] _____ cycles

Q6: /14

7a. [2]

Index: _____ bits;	Offset: _____ bits

7b. [4]

A[1023] → Index _____;	*B*[1023] → Index _____;

7c. [2]

Array *A*: _____ accesses;	Array *B*: _____ accesses

7d. [2]

Array *A*: _____ %;	Array *B*: _____ %

7e. [4]

Misses: _____;	Hits: _____

Q7: /14

=== END OF PAPER ===