Computer Architecture

CSE313/CSE 3313

Assignment 1

Section: **C**

Submitted to:

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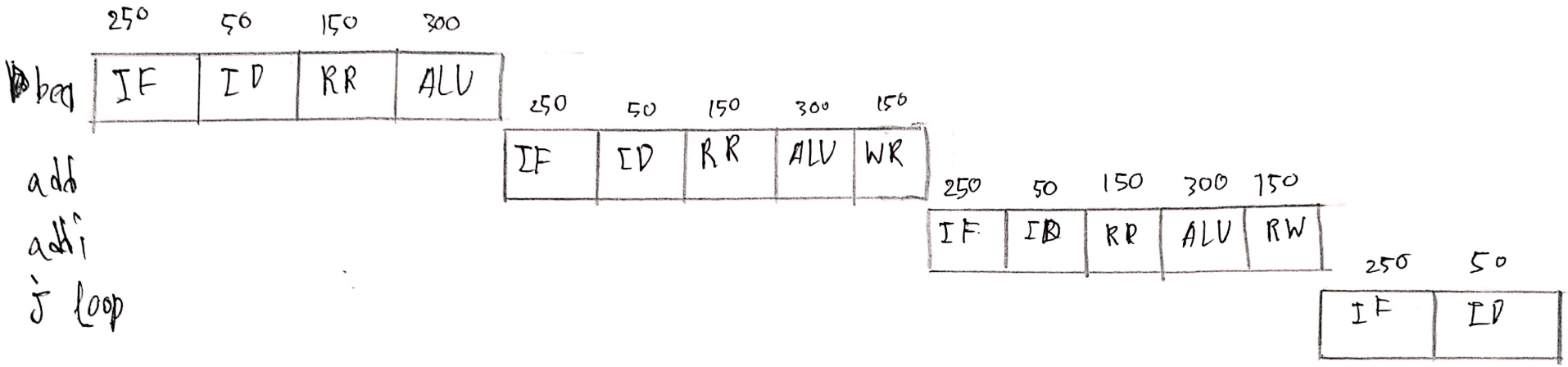
2 (a). No. Answer



Total time taken for the code in singe cycle execution =

time for: beq + add + addi + j

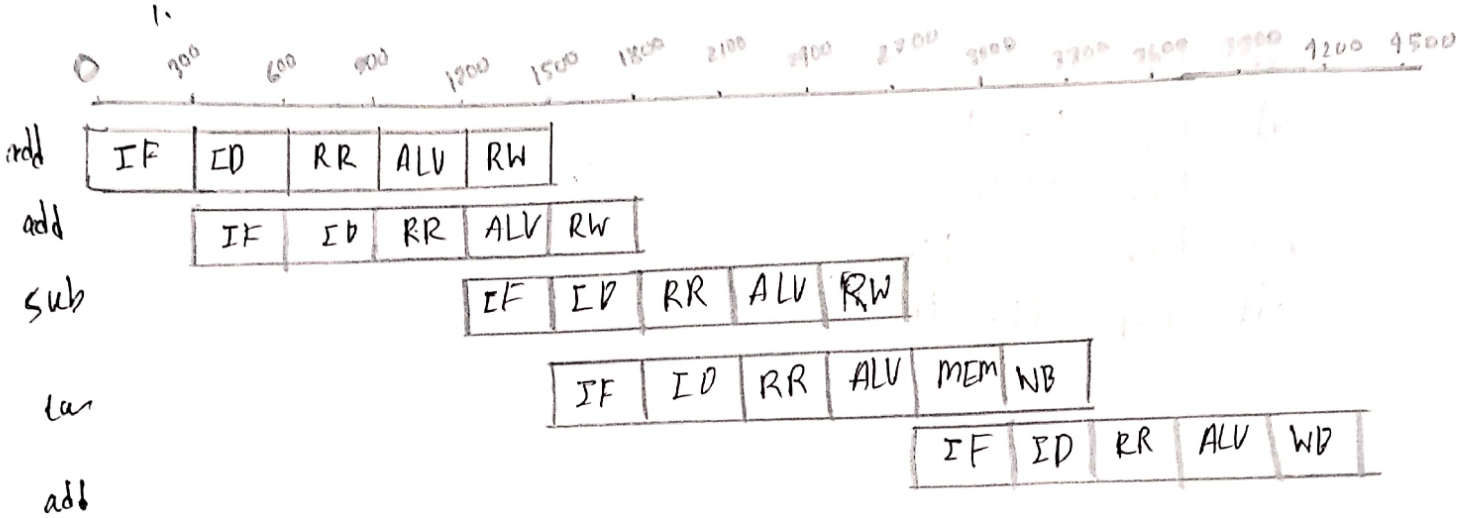
$= 750 + 900 + 900 + 300$

$= 2850$ ps

$= 2.85$ ns

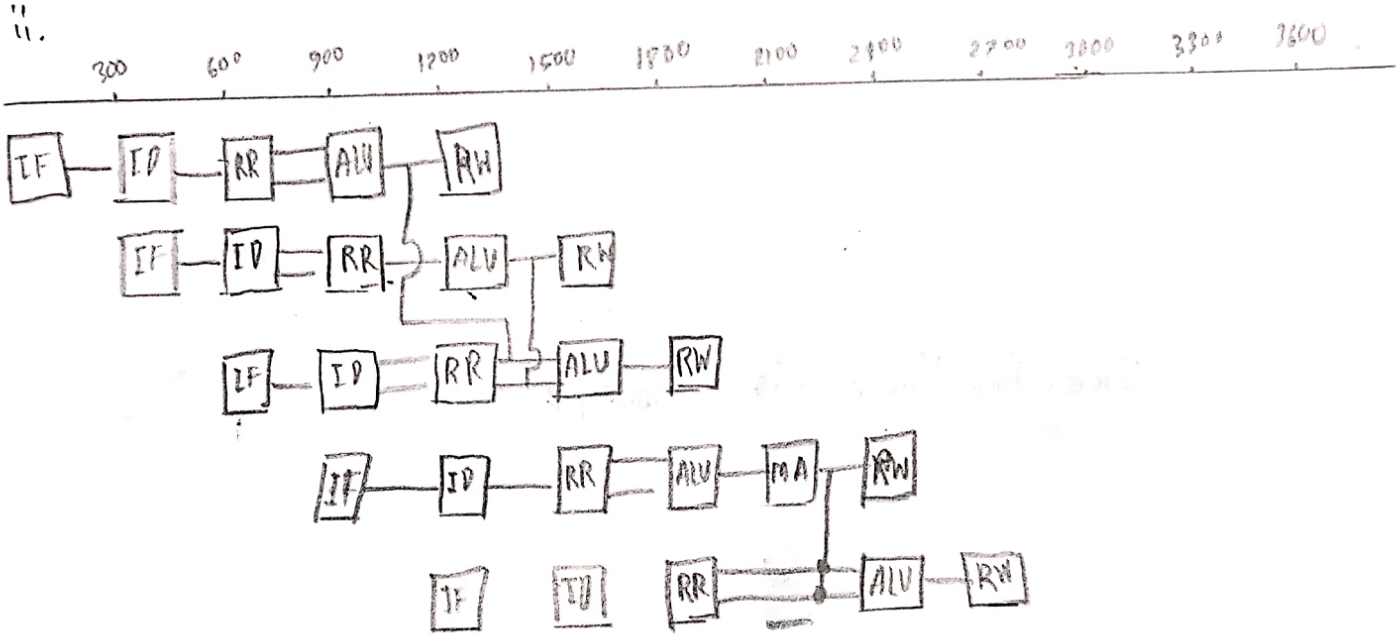
1 (b) No Answer

i.



∴ Execution time by basic pipelining is 4200 ps

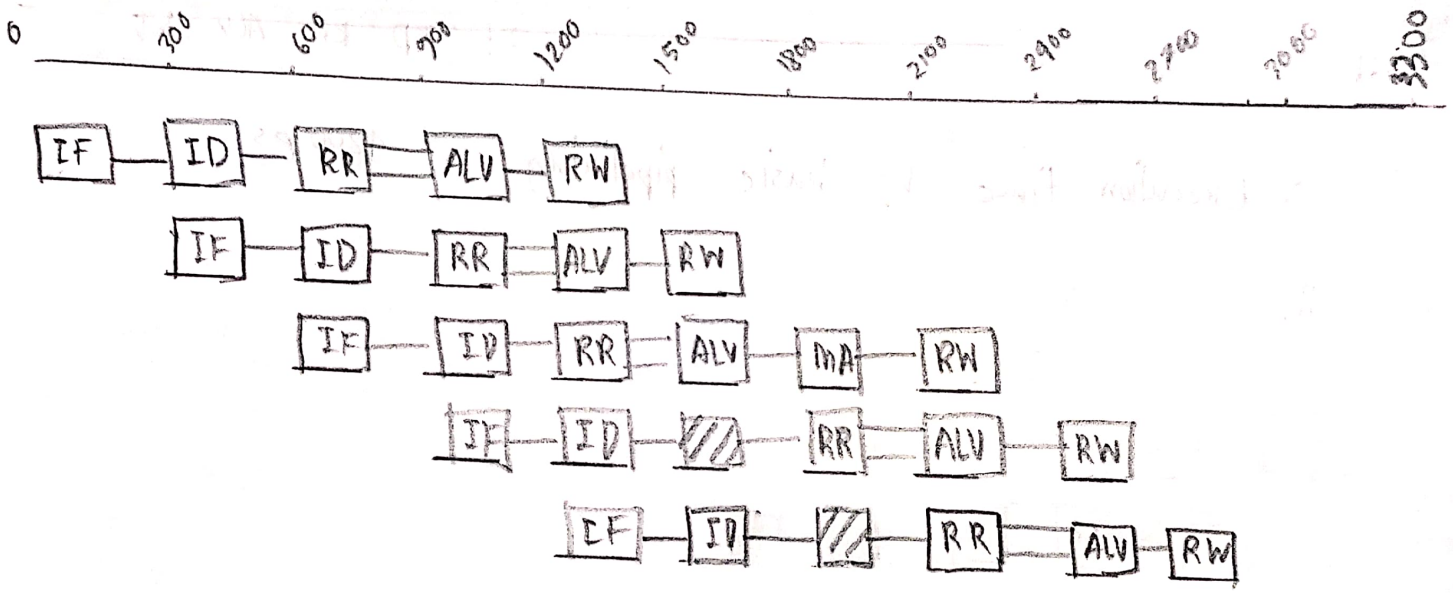
ii.



∴ Execution time by bypassing method is 3000 ps

iii. New code after using code scheduling Method

```
add  $s0 , $s1 , $s2
add  $s1 , $s2 , $s3
lw   $t2 , 20($t1)
sub  $t0 , $s2 , $s3
add  $s4 , $t2 , $t7
```



∴ Execution time is 3000 ps

2 No. Answer

Number of blocks = $64 = 2^6$ $\therefore n = 6$

Number of words per block = $4 = 2^2$ $\therefore m = 2$

Size of address field = 32 bits

$\therefore$ tag size = $32 - (n+m+2)$

$= 32 - (6+2+2)$

$= 22$ bits

for index $= 5 = 000101$

$\therefore$ the words that will be copied to the block with index no. 5 are

$00000101 = 5$

$01000101 = 69$

$10000101 = 133$

$11000101 = 197$