

# Examen Parcial I - Solución

## Problema 1

1. D
2. E
3. B
4. A
5. C

## Problema 3

1. E
2. F
3. D
4. B
5. G

## Problema 2

(a) The value of  $f_n$  at the end of the loop is 8.

(b)

```
.data
f1: .word 0
f2: .word 1
fn: .word 0
n: .word ...
```

```
text
la $t0, n
lw $s5, 0($t0)           // n en s5
la $t0, f1
lw $s1, 0($t0)          // f1 en s1
la $t0, f2
lw $s2, 0($t0)          // f2 en s2
la $t0, fn
lw $s3, 0($t0)          // fn en s3
addi $s4, $zero, 0      // i en s4

loop: bge $s4, $s5, exit
      add $s3, $s2, $s1
      move $s1, $s2
      move $s2, $s3
      j loop

exit:
```

---

```
// deallocate registers.
la $t0, f0
sw $s0, 0($t0)
la $t0, f1
sw $s1, 0($t0)
la $t0, fn
sw $s3, 0($t0)
```

(c) Easy I version

andi  $\phi$

storei 1000  $f_1 = \phi$

storei 1004  $f_n = \phi$

storei 1006  $i = \phi$

addi 1

storei 1002

loop: loadi 1008

comp

addi 1

add 1006

brni stay

jumpi exit

stay: loadi 1000

add 1002

loadi 1002

store 1000

loadi 1002

storei 1000

loadi 1004

storei 1002

→ jump loop.

Assume the following  
memory layout.

VAR	ADDRESS
$f_1$	1000
$f_2$	1002
$f_n$	1004
$i$	1006
$n$	1008