

## CS 271 Computer Architecture and Assembly Language

### Self-Check for Lecture#16

#### Solutions

1. Convert the following infix expressions to RPN:

a.  $(a + b) - (c + d) * e$   
**ab+cd+e\*-**

b.  $a + b * c - d * e / f + h$   
**abc\*+de\*f/-h+**

2. Convert the following postfix expressions to infix:

a.  $abc+d**$   
**a+((b+c)\*d)**

b.  $ab+cd/ef/+g-h*$   
**((a+b)+((c/d)\*e)/f)-g)\*h**

3. Let  $a = 5, b = 7, c = 4, d = 2, e = 3, f = 1, g = 6$ . Evaluate the following RPN expressions:

a.  $ab+c-d*$                       **16**

b.  $ab+c+de*f/g-*$               **0**

4. Implement the statement  $G = (A + B * C) / (D - E * F)$  in the IA-32 floating-point unit. It's not necessary to write a complete program or procedure ... just write an FPU code fragment.

**NOTE: The RPN equivalent is  $ABC*+DEF*-/$**

```
finit
fld      A
fld      B
fld      C
fmul
fadd
fld      D
fld      E
fld      F
fmul
fsub
fddiv
fstp     G
```