

Name: KEY

Id#

**COE 205, Term 043**  
**Computer Organization & Assembly Programming**  
**Quiz# 5**

Date: Monday, August 1, 2005

Q1. Write assembly code to multiply the content of register AL by 24.25. Do not use MUL or IMUL instructions.

```
MOV AH, AL
SHL AH, 3      ; AH = 8*AL
MOV BH, AH
SHL BH, 1      ; BH = 16*AL
ADD AH, BH     ; AH = 24*AL
SHL AL, 2      ; AL = 0.25 AL
ADD AL, AH     ; AL = 24.25*AL
```

Another Solution:

```
MOV AH, AL
SHL AH, 5      ; AH = 32*AL
MOV BH, AH
SHL BH, 1      ; BH = 64*AL
ADD AH, BH     ; AH = 96*AL
ADD AL, AH     ; AL = 97*AL
SHL AL, 2      ; AL = 24.25 AL
```

Q2. Write assembly code to count the number of 1's in register AL and store the count in register AH. The content of AL should be preserved.

```
MOV CX, 8
XOR AH, AH
Next: ROL AX, 1      ; you can also use ROR AX, 1
      ADC AH, 0
      LOOP Next
```