



Student Name: _____ Roll# _____ GR# _____

Answer the following questions.

1. Why reading a memory operand costs more than reading a register operand? **[2 Points]**
Because registers are located within the CPU, no addressing is involved hence no need to fetch data through busses, access delay is minimal which is not the case when accessing memory

2. Given that EAX = 0000 1234h, write some code that should place twice of lower 16 bits in upper 16 bits of EAX, e.g. EAX=2468 1234h after processing, do not use MUL. **[4 Points]**

.DATA

TEMP DWORD ?

.CODE

```
MOV    EAX,00001234h  
MOV    TEMP, EAX  
MOV    DX, WORD PTR [TEMP]  
ADD    DX, DX  
MOV    WORD PTR [TEMP+2], DX  
MOV    EAX, TEMP
```

3. Using direct-offset addressing mode and LOOP only, replace each of the following DWORD elements with its mathematical thrice (X3), do not use MUL or DIV instructions: **[4 Points]**

ARR1 SDWORD -2, 4, 6, -8, -10, 22, 24, 26

.CODE

```
MAIN PROC  
MOV    ECX, LENGTHOF ARR1  
MOV    ESI, 0  
L1:    MOV    EAX, [ARR1+ESI]  
MOV    EDX, EAX  
ADD    EAX, EAX  
ADD    EAX, EDX  
MOV    [ARR1+ESI], EAX  
ADD    ESI, TYPE ARR1
```

LOOP L1

4. Elaborate the difference between **PTR** and **LABEL** through some working example. **[2 Points]**

FREE RESPONSE