EE213 Computer Organization and Assembly Language
Quiz I (Section B_G) – Fall 2019
September 18, 2019
Paper-A SOLUTION

1. Assuming the following data segment starts at **0000 1F10h**, answer the following questions: **[6 Points]**

```
.data
     val32      LABEL      DWORD
     var1       WORD       0F00Fh, 2 DUP (0FD1h, 1F0Dh)
     var3       DWORD      $
.code
     MOV        EAX, PTR DWORD [val32+3]          ; EAX = D1 1F 0D 0Fh
     INC        AL                                ; EAX = D1 1F 0D 10h
     MOV        EDX, EAX                          ; EDX = D1 1F 0D 10h
     XCHG       AL, AH                            ; EAX = D1 1F 10 0Dh
     XCHG       DX, WORD PTR [var3 + 1]           ; EDX = D1 1F 00 1Fh
```

VAL32/VAR1	00001F10h	0F		00001F18h	0D
	00001F11h	F0		00001F19h	1F
	00001F12h	D1	VAR3	00001F1Ah	1A
	00001F13h	0F		00001F1Bh	1F => 10
	00001F14h	0D		00001F1Ch	00 => 0D
	00001F15h	1F		00001F1Dh	00
	00001F16h	D1			
	00001F17h	0F			

A. What does EAX, and EDX contain after the above code gets executed?

EAX = D1 1F 10 0Dh
EDX = D1 1F 00 1Fh

B. Draw out the **var3**'s memory look up (byte by byte) after above code gets executed.

00001F1Ah	1A
00001F1Bh	10
00001F1Ch	0D
00001F1Dh	00

2. Fill in the blanks: **[2 Points]**

I. **MEMORY SEGMENT /ARRAY** is a block of consecutive memory bytes, identified by a base address.

II. The ECS register is used to store the **BASE ADDRESS OF CODE SEGMENT**.

III. In 32-bit mode, aside from the stack pointer (ESP), **EXTENDED STACK SEGMENT (ESS)** register points to variables on the stack.

IV. **EXTENDED INSTRUCTION POINTER (EIP)** register contains the address of the next instruction to be executed.

3. Complete the given diagram. **[4 Points]**