



Philadelphia University
Faculty of Engineering

Marking Scheme

Examination Paper

Department of CE

Module: Microprocessors (630371)

First Exam

Second Semester

Date: 10/04/2011

Section 1

Weighting 15% of the module total

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Marking Scheme Microprocessors (630371)

The presented exam questions are organized to overcome course material, the exam contains 5 questions; *all questions* are compulsory requested to be answered. Thus, the student is permitted to answer any question out of the existing ones in this section.

Marking Assignments

The following scheme shows the marks assignments for each question. They show also the steps for which a student can get marks along the related procedure he/she achieves.

Question 1 This question is attributed with 5 marks if answered properly

The answer for this question as the following:

1. What are the names of the 4 segment registers?
 - a) Data, Index, Code, Stack c) **Stack, Extra, Code, Data**
 - b) Stack, Data, Base, Counter d) Stack, Index, Extra, Code
2. If **DS = 90A3H**, then the range of physical addresses for the data segment is:
 - a) 90A30H - 9FA30H c) 00000H - 090A3H
 - b) 090A3 - 190A2H d) **90A30 - A0A2FH**
3. The 8086/8088 used two processing logical units which were known as:
 - a) Segment and Offset Units
 - b) Bus Interface Unit and Execution Unit**
 - c) Bus Unit and Execution Interface Unit
 - d) ALU and Control Unit
4. In the following data definition, assume that **List2** begins at offset **2000h**. What is the offset of the third value (5)?


```
List2 WORD 3,4,5,6,7
```

 - a) **2004h** c) 2002
 - b) 2006 d) 2003
5. The EQU directive permits a constant to be redefined at any point in a program.
 - a) True b) **False**

Question 2 This question is attributed with 2.5 marks if answered properly

The answer for this question as the following:

MOV statements	Explain
<code>mov ds,45;</code>	immediate move to DS not permitted
<code>mov esi,wVal;</code>	size mismatch
<code>mov eip,dVal;</code>	EIP cannot be the destination
<code>mov 25,bVal;</code>	immediate value cannot be destination
<code>mov bVal2,bVal;</code>	memory-to-memory move not permitted

Question 3 This question is attributed with 2.5 marks, if answered properly.

The answer for this question as the following:

Destination	SF	ZF	CF
AX = 0100h	0	0	0
AX = 00FFh	0	0	0
AL = 00h	0	1	1
BH = 01h	0	0	1
AL = FFh	1	0	1

Question 4 This question is attributed with 2 marks, if answered properly.

The answer for this question as the following:

1. General purpose registers (Data Registers)
2. Segment Registers
3. Index registers
4. Status and Control register

Question 5 This question is attributed with 3 marks, if answered properly.

The complete code for this question as the following:

```
TITLE Calculate the expression
```

```
.386
```

```
.MODEL FLAT
```

```
.STACK 4096
```

```
.data
```

```
    X SDWORD 23
```

```
    Y SDWORD 3fkeh
```

```
    Z SDWORD 42
```

```
    R SDWORD ?
```

```
.code
```

(1.5 marks)

```
main PROC
```

```
    mov ebx,Y
```

```
    add ebx,ebx
```

```
    neg ebx
```

```
    add ebx,Z
```

```
    mov eax,X
```

```
    sub eax,ebx
```

```
    mov R,eax
```

```
main ENDP
```

```
END main
```

(1.5 marks)