



Question 1: [10 Points]
Describe the special uses for each of the following registers.

EAX: Accumulator register. Used in arithmetic operations Accumulator for operands and results
EDX: Data register. Used in arithmetic operations and I/O operations
ESP: Stack Pointer register. Pointer to the top of the stack
ESI: Source register. Used as a pointer to a source in stream and array operations
EIP: Instruction Pointer

Question 2: [20 Points]
Put \checkmark in front of correct statement and \times in front of wrong one

No	Statement	Answer
1.	The DI registers is a 16-bit register.	\checkmark
2.	The register SI is divided to two registers each of 8 bits.	\times
3.	Data transfer instructions can affect the flag bits.	\times
4.	The registers SP/ESP are used with CS register to locate the next instruction.	\times
5.	Displacement is a signed value, so it can be both positive and negative.	\checkmark
6.	In real mode, a far jump accesses any location within the first 1M byte by changing both CS and IP.	\checkmark

8.	In real-mode addressing if the beginning segment address is 028FH the memory location having an effective address of 03FFFH lies within the segment.	√
9.	The maximum size of memory segment is 640K bytes of memory.	X
10.	The combinations (DS:BX) locates the next instruction executed by the microprocessor.	X

Question 3:

[60 Points]

Identify the choice that best completes the statement or answers the question.

- If ES = D321H, then the range of physical addresses for the extra segment is:
 - 0000H – 0D321H
 - D3210H – D321FH
 - D3210H – E320FH
 - 0D321H – 1D320H
- If CS = 020AH, SS = 0801H, SI = 0100H and IP = 1BCDH the address of the next instruction is:
 - 03C6D
 - 03D5D
 - 03C70
 - None of the above
- Which of the following defines a constant Count?
 - Count db 80
 - Count equ 80
 - mov Count, 80
 - None of them

Assume the following same initial processor state to answer questions (4), (5), and (6) below. Treat each part individually.

AX	6521 H
BX	ABCD H
CX	0105 H
DX	876F H

Flags					
C	A	Z	S	P	O
1	0	1	0	0	0

- What will be the contents of AX after SUB AL, AH
 - 65BC H
 - 4421 H
 - BC21 H
 - 6544 H
- What are the flags after CMP AH, CL
 - C=1, Z=0, S=1
 - C=0, Z=1, S=0
 - C=0, Z=1, S=1
 - C=0, Z=0, S=0
- What are the contents of BL after OR BL, 1FH
 - DF H
 - D2 H
 - FC H
 - DD H

c) The address bus

d) The control bus

29. If $DS = 90A3H$, then the range of **physical addresses** for the data segment is:

a) $90A30H - 9FA30H$

c) $090A3 - 190A2H$

b) $00000H - 090A3H$

d) $90A30 - A0A2FH$

30. The read/write line is

a) belongs to the address bus

b) CPU bus

c) belongs to the control bus

d) belongs to the data bus