EECE.3170: Microprocessor Systems Design IFall 2016

Lecture 10: Key Questions September 26, 2016

1.	Explain the operation of the rotate instructions (ROL, ROR, RCL, RCR).							
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2.	Example: Given $AL = 0x43$, $CL = 0x04$, and $CF = 0$, show the state of AL after each instruction in the sequence below:							
	ROR AL, 2							
	ROL AL, CL RCR AL, 3							
	RCL AL, 4							

3. Explain the operation of the bit test instructions (BT, BTR, BTS, BTC)

4. Explain the operation of the bit scan instructions (BSF, BSR).

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5. **Example:** Given the following initial state, list <u>all</u> changed registers and/or memory locations and their new values. Where appropriate, you should also list the state of the carry flag (CF).

Initial state:

EAX: 0x00000000
EBX: 0x0000000A
ECX: 0x00000000
EDX: 0x00000000
OF 0

CF: 0

ESI: 0x00000008 EDI: 0xFFFF0000

Address

0x21100	04	00	10	10
0x21104	89	01	20	40
0x21108	02	00	00	16
0x2110C	17	03	FF	00
0x21110	1E	00	06	00
0x21114	80	00	0A	00

Instructions:

BT	WORD	PTR	[0x2	1102],	4
BTC	WORD	PTR	[0x2	1110],	1
BTS	WORD	PTR	[0x2	1104],	1
BSF	CX, T	WORD	PTR	[0x211	0E]
BSR	DX, V	WORD	PTR	[0x211	091