King Fahd University of Petroleum & Minerals  
Electrical Engineering Department  
EE-390; Exam-1(071); 4th October, 2007

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**Answer all questions. Time 1.20 hour**

Name : ____________________________  
Section : ___________________  
I.D. : _______________________

1(a). Write a program that will add the contents of the ten data-words, stored in memory locations starting from DS:1050H, and store the sum into a memory location of ES:2050H.

Line1: ____________________________  
Line8: ____________________________

_________________________  
_________________________  
_________________________  
_________________________  
_________________________  
_________________________  
_________________________  
_________________________  
_________________________  
_________________________  

1(b). Using shift-rotate instructions fill the contents of AL register with the existing content of the carry flag. Use 3-line of program code.

Line1: ____________________________

Line3: ____________________________

Line1: ____________________________
2(a). If DS = 1000H, ES = 2000H, SS = 3000H, BP = 2345H, SP = 3456H, SI = 9876H, DI = 1122H and the word memory-contents of following physical address are:

- 1000:2345H → 7823H,
- 1000:2347H → 1418H,
- 1000:2349H → 3000H,
- 3000:2345H → 9867H,
- 3000:2347H → 6543H,
- 3000:2349H → 1000H,
- 2000:2345H → 4AB7H,
- 2000:2347H → 4C4BH,
- 2000:2349H → 9000H,

Execute the following 3-line program and find SI, DI and addressing mode:

```
LEA BP, [DS:2347H];
LES SI, [BP];
LDS DI, [ES:2347H];
```

(i) SI = _____________

(ii) DI = _____________

(iii) Addressing mode used in the 3rd line: ____________________________

2(b). IF AX = 7F98H, BX = 0087H, Execute the following 4-line program and find the required value of AX and DX:

```
ADD AL, BL;
DAA;
ADC AH, 0H;
CWD;
```

(i) AX = _______________

(ii) DX = _______________
3(a). Write a 2-line program that will TOGGLE the MSB and MASK the LSB contents of AH register, without changing the contents of other bits of AH register.

Line 1: _____________________________________________

Line 2: ______________________________________________

3(b). 8088 processor has ____________ bit address bus

3(c). If the CPU registers already have the initial values of BX=0710H, SI=0750H, DI=0730H. Without changing these values, use Indexed memory addressing mode to load the AX register with the word content of physical address= 907A2H

Use as many lines as needed to write the efficient program

Line 1: _____________________________________________

Line 2: ______________________________________________

Line 3: ______________________________________________

Line 4: ______________________________________________