

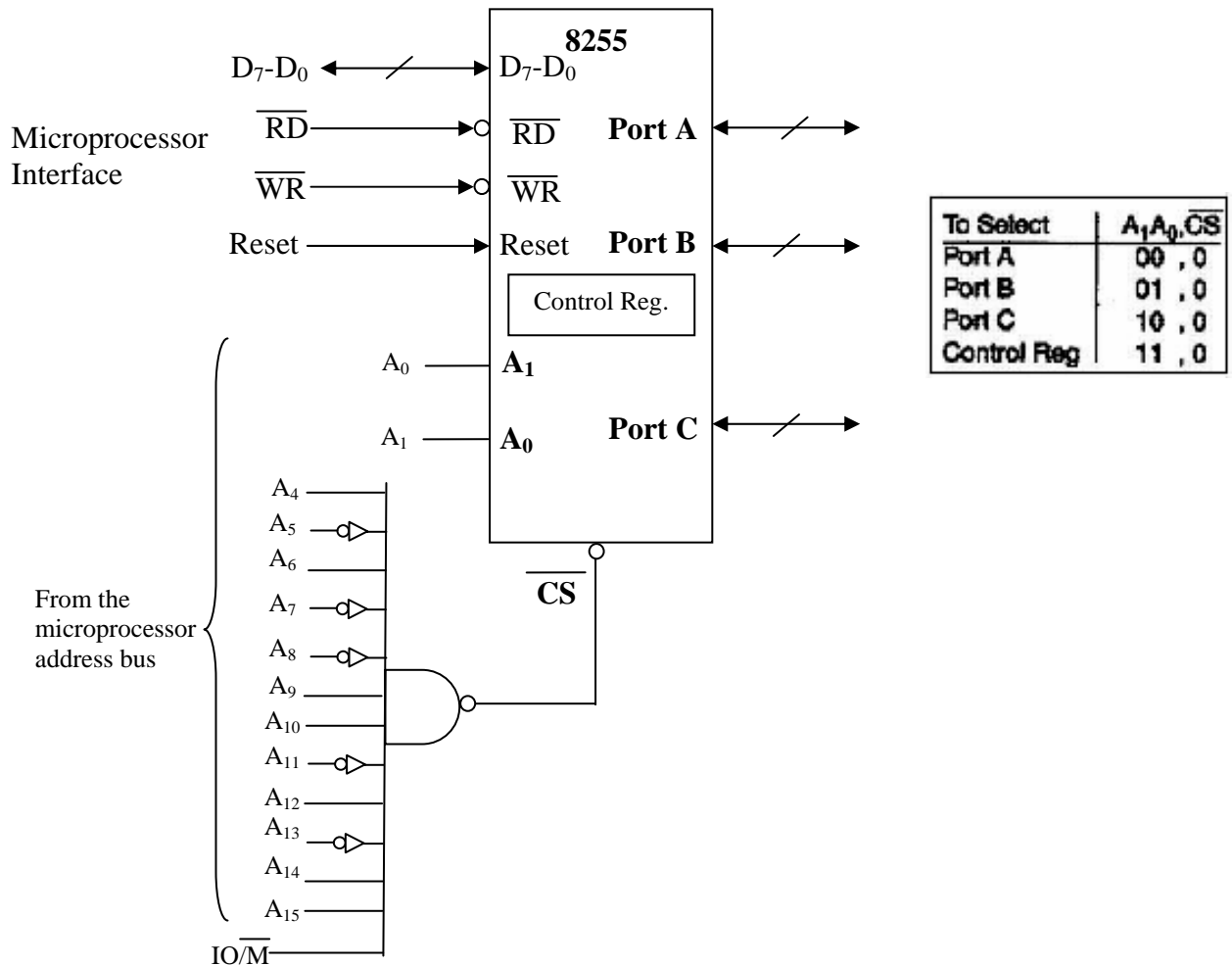
King Fahd University of Petroleum & Minerals
Electrical Engineering Department
EE-390; Exam-2

Prob.1	Prob.2	Prob.3	Total

Name : _____ Section : **I** **I.D.** _____

*Answer all **three** questions. All three questions carry **equal** marks.*

1(a). Find the address of Port A, Port B, Port C and the Control Reg. of the following 8255 interface to 8088 Microprocessor. Put your answer in Hex in the specified box below.



Port A (Physical address)	(in Hex)
Port B address	(in Hex)
Port C address	(in Hex)
Control Register address	(in Hex)

****Remember to use 0's for don't cares address pins.**

1(b). If the circuit of question 1(a) is operating in **Mode-0** of Isolated I/O interface, write a program to;

(a) **Input** data Byte using “Port-B”

(b) Inverted Least Significant Nibble of the inputted data and **Output** them via Port C-Upper

*Note: unused ports are configured as **output-ports** AND don't care address pins →'0'*

Write the Program **within** the given lines.

```
TITLE "Question 1(b)"
```

```
.MODEL SMALL
```

```
.STACK 032H
```

```
.DATA
```

```
.CODE
```

```
    MOV AX, @DATA
```

```
    MOV DS, AX
```

```
    MOV AX,4C00H
```

```
    INT 21h
```

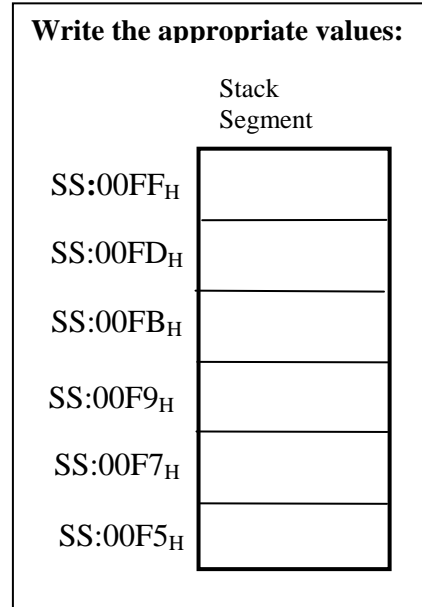
```
END
```

2(a). Execute the following program and find the contents of the required registers and the memory contents of the stack segment. (Assume LI=4351_H)

```

Title "Major "
.MODEL small
.STACK 32
.DATA
    VAR1 DW 0506H, 0708H, 080AH
    VAR3 DB B1H, C2H, D0H
.CODE
    MOV AX,@DATA
    MOV DS,AX
    MOV SP,00FDH
    LEA SI,VAR1
    MOV BX,wordptr [SI]
    PUSH BX
    LEA BX,VAR3
    XOR AX,AX
    JC LI
    XLAT
    PUSH AX
    CALL SUB1
LI : POP BX
    POP DX
    MOV AX,4C00H
    INT 21H
        SUB1 PROC NEAR
            MOV CX,SP
            PUSH CX
            ADD SP,02H
            RET
        ENDP
END

```



After the program execution find:

BX = ______H ;

DX = ______H ;

2(b). Write a program that will use “**String Instruction**” and “**REP**” prefix to initialize Fifteen byte-wide memory locations, starting from 1230_H, with an initial value of 78_H. **Assume** that the CPU registers are **already** initialized as: DS=ES=SS=8000_H and all flags=‘0’. Use **maximum 4-line** of program code

```

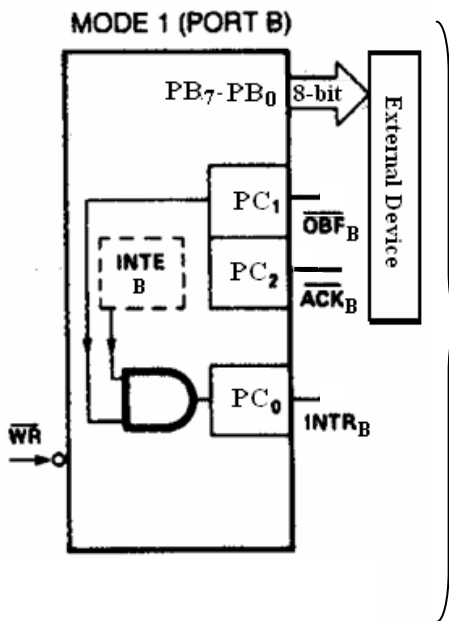
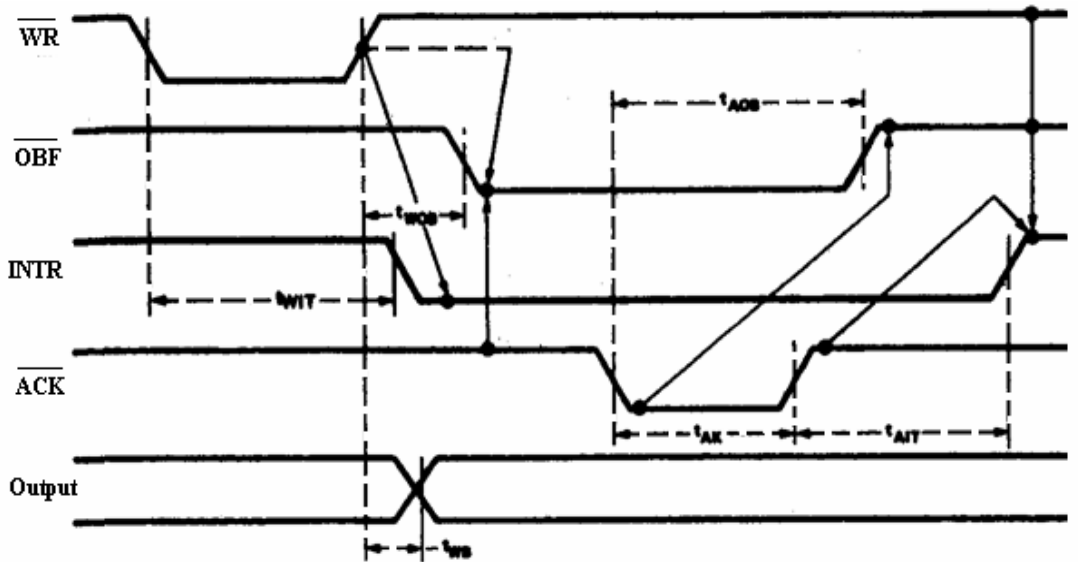
TITLE "question 2b"
.MODEL SMALL
.STACK 032H
.CODE
    _____
    _____
    _____
    _____

    MOV AX,4C00H
    INT 21h
END

```

3(a). Write approximate steps required to complete output bus-cycle of Port B operating in Mode 1. The timing diagram is also given below.

MODE 1		
Pin	IN	OUT
PA ₀	IN	OUT
PA ₁	IN	OUT
PA ₂	IN	OUT
PA ₃	IN	OUT
PA ₄	IN	OUT
PA ₅	IN	OUT
PA ₆	IN	OUT
PA ₇	IN	OUT
PB ₀	IN	OUT
PB ₁	IN	OUT
PB ₂	IN	OUT
PB ₃	IN	OUT
PB ₄	IN	OUT
PB ₅	IN	OUT
PB ₆	IN	OUT
PB ₇	IN	OUT
PC ₀	INTR _B	INTR _B
PC ₁	IBF _B	OBF _B
PC ₂	STB _B	ACK _B
PC ₃	INTR _A	INTR _A
PC ₄	STB _A	I/O
PC ₅	IBF _A	I/O
PC ₆	I/O	ACK _A
PC ₇	I/O	OBF _A



3(b). Write one difference between Minimum & Maximum mode of operation:
