



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2012/2013**

COURSE NAME : **COMPUTER SYSTEM
ENGINEERING**

COURSE CODE : **BEX 45803 / BEC 4233**

PROGRAMME : **BEE**

EXAMINATION DATE : **JANUARY 2013**

DURATION : **2 HOURS**

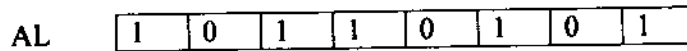
INSTRUCTION : **ANSWER ALL QUESTIONS IN
PART A & ONE (1) QUESTION IN
PART B**

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

PART A

- Q1** (a) Explain about the history of microprocessor until the birth of Intel 8080. (5 marks)
- (b) Describe about the internal organization of computers and its function. (5 marks)
- (c) List two ways to make the CPU processing become faster. (5 marks)
- (d) The logical address of an instruction consists of Code Segment (CS) and Instruction Pointer (IP). If CS = 24F6H AND IP=634AH, calculate:
 (i) The logical address
 (ii) The offset address
 (iii) The physical address
 (iv) The lower range
 (v) The upper range of code segment (10 marks)

- Q2** (a) Briefly explain four types of rotate instructions. (2 marks)
- (b) How could rotate instruction been used to find number of 0's in AL register as shown below?



- (5 marks)
- (c) Develop a program based on Q2 (b). (8 marks)
- (d) Modify the program that you develop in Q2(c) to find number 1. (8 marks)
- (e) Evaluate which type of the rotate instruction is the easiest instruction to be applied in Q2 (c) or (d). Give a reason on your selection. (2 marks)
- Q3** (a) Apply an EXTRN and PUBLIC directives in a simple program. (10 marks)
- (b) Develop a program to convert from ASCII to binary (15 marks)

PART B

- Q4** (a) Explain the function of address decoding? (3 marks)
- (b) Distinguish the use of simple logic gate and 74LS138 for address decoder? (5 marks)
- (c) A computer system with an Intel microprocessor requires 16Kx8 ROM. Based on Figure Q4 and Table Q4, investigate a suitable design by evaluate the address range and verify the block size controlled for Y1 and Y6. (17 marks)
- Q5** (a) Analyze the LCD code line by line as shown in Figure Q5-1. (11 marks)
- (b) A manufacturer has advertised a 14-inch monitor of 1024 x 768 resolutions with a dot pitch of 0.28. Predict the diagonal size of the image on the screen. It must be less than 14 inches (3 marks)
- (c) The code shown in Figure Q5-2 is Assembly language program for the detection and identification of the key activation. In this program, it is assumed that PORT_A and PORT_B are initialized as output and input, respectively. Analyze the program using four major stages that suitable for keypad activation. (11 marks)

-END OF QUESTION-

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TABLE Q4

Inputs			Outputs							
G1	G2	Select	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X	H	XXX	H	H	H	H	H	H	H	H
L	X	XXX	H	H	H	H	H	H	H	H
H	L	LLL	L	H	H	H	H	H	H	H
H	L	LLH	H	L	H	H	H	H	H	H
H	L	LHL	H	H	L	H	H	H	H	H
H	L	LHH	H	H	H	L	H	H	H	H
H	L	HLL	H	H	H	H	L	H	H	H
H	L	HLH	H	H	H	H	H	L	H	H
H	L	HHL	H	H	H	H	H	H	L	H
H	L	HHH	H	H	H	H	H	H	H	L

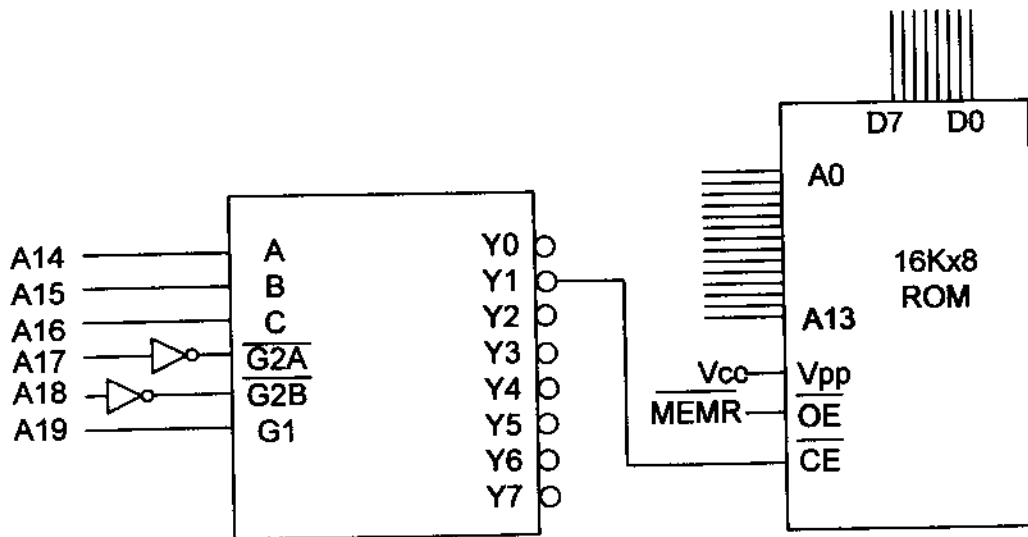


FIGURE Q4

FINAL EXAMANATION

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PROGRAMME: BEE
COURSE CODE: BEX45803/BEC4233

```
MOV AL, 38H
CALL COMNDWRT
CALL DELAY
CALL DELAY
CALL DELAY
MOV AL, 0EH
CALL COMNDWRT
CALL DELAY
MOV AL, 01
CALL COMNDWRT
CALL DELAY
MOV AL, 06
CALL COMNDWRT
CALL DELAY

COMNDWRT PROC
    PUSH DX
    MOV DX, PORTA
    OUT DX, AL
    MOV DX, PORTB
    MOV AL, 0000100B
    OUT DX, AL
    NOP
    NOP
    MOV AL, 00000000B
    OUT DX, AL
    POP DX
    RET
COMNDWRT ENDP
```

FIGURE 05-1

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<p>KCOD_0 DB 0,1,2,3 KCOD_1 DB 4,5,6,7 KCOD_2 DB 8,9, 0AH, 0BH KCOD_3 DB 0CH, 0DH, 0EH, 0FH</p> <p>KI: PUSH BX SUB AL, AL OUT PORT_A, AL IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JNE K1 CALL DELAY</p> <p>K2: IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JE K2 CALL DELAY</p> <p> IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JE K2</p> <p> MOV AL, 1111110B OUT PORT_A, AL IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JE RO_1 MOV BX, OFFSET KCOD_0 JMP FIND_IT</p> <p>RO_1 MOV AL, 11111101B OUT PORT_A, AL IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JE RO_2 MOV BX, OFFSET KCOD_1 JMP FIND_IT</p> <p>RO_2: MOV AL, 1111011B OUT PORT_A, AL IN AL, PORT_A AND AL, 00001111B CMP AL, 00001111B JE RO_3 MOV BX, OFFSET KCOD_2 JMP FIND_IT</p> <p>RO_3: MOV AL, 1111011B OUT PORT_A, AL</p>	<p>IN AL, PORT_B AND AL, 00001111B CMP AL, 00001111B JE K2 MOV BX, OFFSET KCOD_3</p> <p>FIND_IT: RCR AL, 1 JNC MATCH INC BX JMP FIND_IT</p> <p>MATCH: MOV AL, [BX] POP BX RET</p>
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FIGURE Q5-2