International Islamic University Chittagong
Department of Electrical and Electronic Engineering

Assignment Examination Autumn-2019 | Program: B.Sc. Engg. (EEE)

Course Code: **EEE 3505** | Course Title: ***Microprocessor & Interfacing***

Full Marks: **5×8=40** | Time: Within **12 Hrs** from the time of Assignment launched.

Please Answer One of the Question Groups from bellow.

****Please show the ***Calculation of Question Group Selection*** at the 1st page of answer sheet.***

Question Group-1: 1(a), 2(a), 3(a), 4(a), 5(a)*---5x8=*40 Marks

Question Group-2: 1(b), 2(b), 3(b), 4(b), 5(b)*---5x8=*40 Marks

Question Group-3: 1(a), 2(b), 3(a), 4(b), 5(a)*---5x8=*40 Marks

Question Group-4: 1(b), 2(a), 3(b), 4(a), 5(b)*---5x8=*40 Marks

Question Group Selection Process:

LDI*=x=Last digit of student ID*

[For Question Selection: *(Last digit of Student ID=x)+(the Digit before last digit of Student ID=y)=****Z****÷2=***Result of Division (RD)***; then Do, **RD-5=**then **Modulus of the result is Your Question Number**. *If the value of* **Z=0** *, answer* ***Question Group-1***, if **Z=1**, answer ***Question Group-2***. Moreover, *if* **RD-5=0** answer ***Question Group*-3.**

Example: for St. ID =ET 1510**14**; St. last digit of ID=4=***x***; and the digit before last digit of ID is =1=**y**; So, **Z**=*(x+y)*=(4+1)=**5**. Now (Z÷2)=(5÷2)=2=RD. Now, (RD-5)= -3=Modulus of -3=3; So you have to Answer ***Question Group*-3**.]

1(a). What is the difference between 'AND' and 'TEST' instruction? **08**

Write an assembly language program that reads in values from two sensors connected to port number 05H and 08H; adds these two values. If the result of addition is positive, store the result in [0001] memory location and if the result of addition is negative store at [0005] memory location.

1(b). What do you mean by Loop instruction? **08**

Using Loop instruction write assembly language program to find out the sum of following series.
1+4+7+10+13+…… +(last 3 digit of your ID).

2(a). Point out the difference between INTR and NMI pins of 8086 microprocessor. What will be the output of $M/\overline{IO}$, $DT/\bar{R}$ and RD pin of 8086 microprocessor when MOV AX, [BX] is executed? **08**

2(b). Write down the difference between JUMP and CALL operation. What are the steps taken by 8086 when interrupt comes? **08**

3(a). An 8086-8255 based system is required to operate an 7-segment display (Common-Cathode) connected to Port A based on two switch inputs connected to bit 0 and 1 of Port B as **Fig.1**. If both switches are either high or low, display number 0; otherwise, display number **LDI (Your last digit of ID).** Assume base address of 60H. Write an 8086 assembly language program to accomplish this. **08**

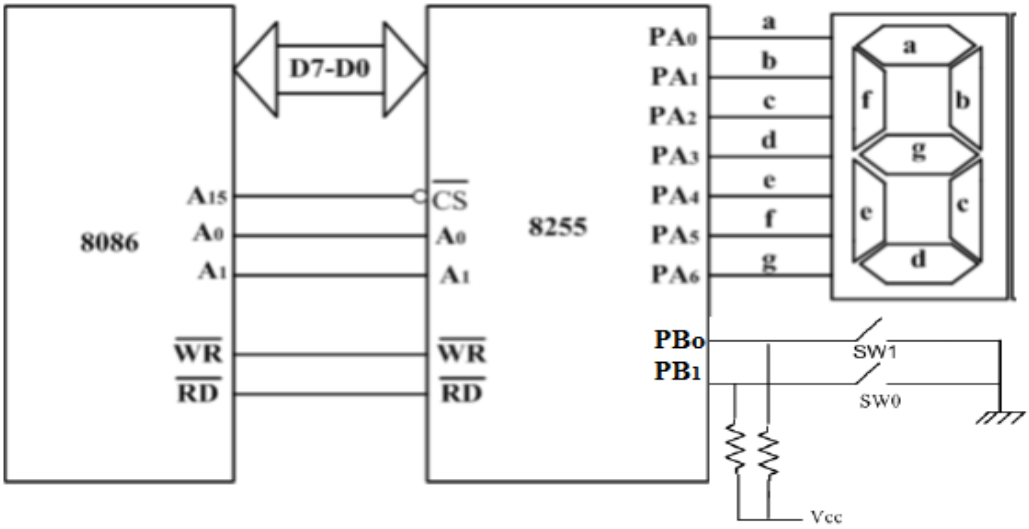

Fig.1

3(b). Write a BSR control word subroutine to set bit PC6 and PC2 and reset them after (last two digit of your ID) ms. Also write the delay procedure considering the processor clock at 6MHz. **08**

4(a). i. Suppose, one LED is connected to the output of Counter 1 in an 8086-8254 based system. The LED has to be made OFF for 1second every 5 seconds after. Which operation mode of 8254 PIT (Programmable Interval Timer) you have to use to perform this? Justify your answer. **08**

ii. In an 8086-8254 based system the output of Counter 0 of 8254 PIT is initially high. The Gate of Counter0 can be retriggered by a semiconductor switch. Triggering of the gate makes the output of Counter0 low for 50μs. Write an 8086 subroutine to this job considering the **Fig.2.** Assume base address of 60H.

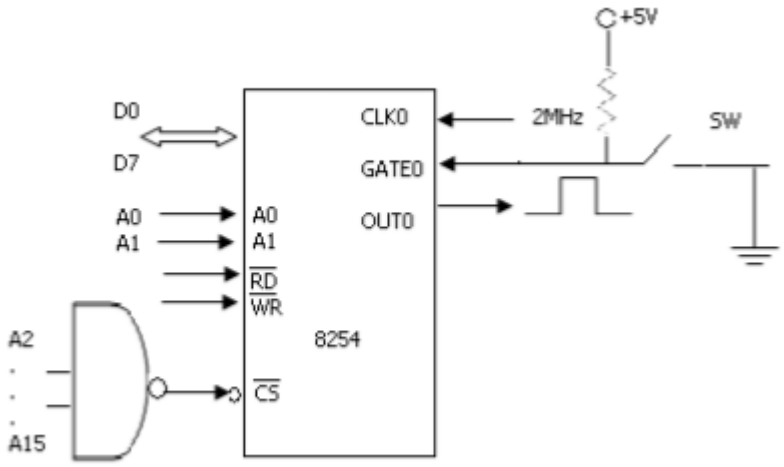

Fig.2

4(b). Write a subroutine to generate an interrupt every .05 minute. Clock frequency (last two digit of your ID) MHz. **08**

5(a). Point out the differences between short, near and far JUMP. Write an assembly language program to find **5!**. **08**

5(b). Write down the difference between counter latch command and read back command. Also describe the mode 0, mode 2 and mode 4 of 8254. **08**