

**International Islamic University Chittagong**  
**Department of Electrical and Electronic Engineering**

Final Examination Autumn-2018

Course Code: EEE 3505

Time: 2 hours 30 minutes

Program: B.Sc. Engg. (EEE)

Course Title: Microprocessor and Interfacing

Full Marks: 50

**Part A**

[Answer any two questions from the followings; figures in the right margin indicate full marks.]

- 1(a). Write an assembly language program that reads in temperature value from two sensors connected to port number 05H and 08H; adds these two values and store the result in [0001] memory location. 03
- 1(b). Differentiate between 'AND' and 'TEST' instruction? 03
- 1(c). Write an 8086 assembly language program to compute, 04  
Sum =  $x_1y_1 + x_2y_2 + x_3y_3 + \dots + x_ny_n$   
Where  $x$  and  $y$  are signed 8 bit and  $n=50$ . Assume CS and DS are already initialized.
- 2(a). Describe the functions of different pins of 8284A. 05
- 2(b). Explain the similarity and difference between READY and  $\overline{TEST}$  pin of 8086 microprocessor? 03
- 2(c). What is meant by minimum mode and maximum mode operation of 8086? 02
- 3(a). Explain the steps that an 8086 follows to respond to an interrupt request signal when it is interrupted? 04
- 3(b). Write an 8086 assembly language program to find the summation of following series for  $n=10$ : 06  
$$S = \frac{1i}{1} + \frac{2i}{2} + \frac{3i}{3} + \dots + \frac{ni}{n}$$

**Part B**

[Answer any three questions from the followings; figures in the right margin indicate full marks.]

- 4(a). What is meant by 'Handshaking' for microprocessor? Give examples of some handshaking signals. 03
- 4(b). An 8086-8255 based microcomputer is required to drive an LED connected to bit 2 of Port B, based on two switch inputs connected to bit 6 and 7 of port A. If both switches are high or low, LED will turn 'ON'; otherwise, it will remain 'OFF'. Assume base address of 60H. Write an 8086 assembly language program to accomplish this. Also design this system. 07
- 5(a). Draw the internal block diagram of a counter of 8254 PIT (Programmable Interval Timer). Explain the operation of Mode-4 and Mode-5 of 8254 PIT with proper example? 05

- 5(b). In an 8086-8254 based system the output of 'Counter 0' of 8254 PIT is initially high. The Gate of 'Counter 0' can be retriggered by a semiconductor switch. Triggering of the gate makes the output of 'Counter 0' low for 50 $\mu$ s. Write an 8086 control word for 8254 and subroutine to perform this job considering the circuit given in Figure-1. 05

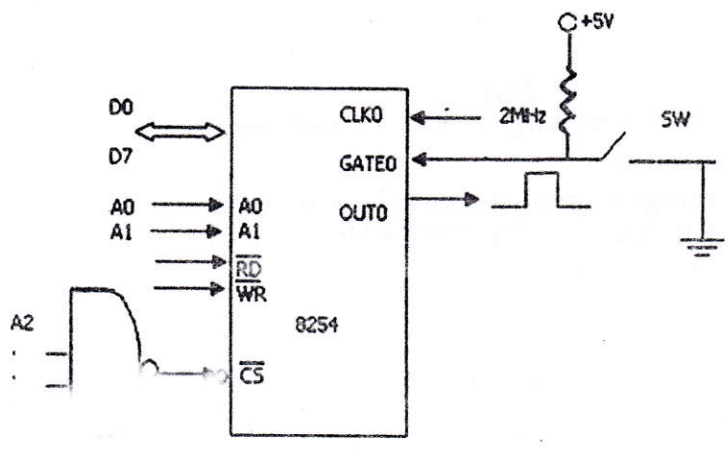


Figure-1

- 6(a). Design a 8086-8259A PIC (Priority Interrupt Controller) based system to connect eight I/O devices to 8086 microprocessor. Explain the basic operation of A/D converter 0804. 06
- 6(b). Draw the block diagram of 8259A PIC (Priority Interrupt Controller) and explain the execution process of interrupt service procedure of microprocessor with the help of 8259A PIC. 04
- 7(a). Write down the format of control word of 8254. 03
- 7(b). Briefly describe the "Generator mode" of the counters of 8254. 02
- 7(c). Write a BSR control word to generate a square wave pulse of width 50 $\mu$ s after 10ms. Also write the delay procedure considering microprocessor clock is 5 MHz. Assume a base address of 60H. 03