International Islamic University Chittagong
Department of Computer Science and Engineering
Final-term Examination, Autumn 2018
Course Code: CSE-3501   Course Title: Microprocessor & Microcontroller
Total marks: *50*   Time: *2* hours 30 minutes

[Answer any **two** questions from **group A** and any **Three** questions from **Group B**
Separate Answer script must be used for Group A and Group B]

Group A

1.a) Suppose your laptop is showing power failure message. What type of interrupt is used for your laptop? Explain reason for your answer. — 4

b) Consider the scenario that INT A and INT B has occurred at the same time where INT A has higher priority than INT B. How is the problem resolved? Illustrate the concept of Programmable interrupt controller with figure. N.B: A and B indicate interrupt type number. — 6

2. a) If more than one interrupts request arises at the same time, which one will get service? — 2

b) Demonstrate the operation of daisy chained interrupt. How does it maintain the interrupt priority? — 4

c) Describe the function of cascading lines in a 8259A programmable interrupt controller. — 4

3. a) Explain the bit slicing technique for bit slice microprocessor. — 5

b) Write shorts notes on Core i5 and Core i3 microprocessor. — 3

c) Show a timeline that indicates interrupt usage in a typical system. — 2

Group B

4. a) Differentiate between Isolated and memory mapped I/O in tabular form. — 5

b) What is DMAC? Why is it used? Write down some real life applications of DMAC. — 5

5. a) Do the following configuration for 8255A: — 3+3
   i) Write a BSR control word of 8255 to set and reset bit PC3 and PC6.
   ii) A control word is given CW=9AH. Explain the conditions of all ports in 8255A.

b) Differentiate between CMP and SUB instruction. — 4

6. a) Write down the usage of embedded systems in real life applications. — 2

b) What is SOC? What is meant by software and hardware partitioning? — 3

c) Draw and explain finite state diagram for an elevator. — 5

7.a) Explain the following interrupts: INT 0, INT 1, INT5. Explain the interrupt type (whether hardware or software interrupts). — 4

b) Draw a finite state machine for an elevator system. Your elevator system must fulfill the following requirements: — 6

"Move the elevator either up or down to reach the requested floor. Once at the requested floor, open the door for at least 15 seconds, and keep it open until the requested floor changes. Ensure the door is never open while moving. Don't change directions unless there are no higher requests when moving up or no lower requests when moving down."