

International Islamic University Chittagong

Department of Computer Science & Engineering (CSE)

Final Examination, Spring-2023

Course Code: CSE 3523

Course Title: Microprocessors, Microcontrollers and Embedded Systems

Total Marks: 50

Time: 2 Hour 30 minutes

[Answer three of the following questions. Figures in the right-hand margin indicate full marks.]

GROUP-A

- 1.(a) Explain with figure how interrupts inputs are expanded with using 74ALS244 three state buffer. Or, Explain how microprocessor can program with 8259A and also explain function of the pin. 4 CLO2
- 1.(b) Explain interrupt vector and its table with figure. What is interrupt service procedure? Or, Draw the circuit diagram for generating interrupts vector type number 1Ah in response to INTA. 4 CLO3
- 1.(c) Show a timeline that indicates interrupt usage in a typical system. 2 CLO3
- 2.(a) Why and how daisy chain interrupt is better than using 74ALS244 explain with proper diagram. 4 CLO3
- 2.(b) Define the following terms: 4 CLO1
a) Bit slicing b) Multitasking c)Threads d)Core 2 Processors
- 2.(c) Write short note on INT and INTA. Or, Describe the function of Slave program/enable buffer pin. 2 CLO1

GROUP-B

- 3.(a) Write the differences between IO-mapped I/O and Memory-mapped I/O 3 CLO1
- 3.(b) Draw the block diagram of 8255A Or, Draw the block diagram of the Intel 80286 Microprocessor 3 CLO1
- 3.(c) How can you perform Multiplication and Division operations in Microcontroller 8051? Explain the process. Or, Differentiate between microprocessor and microcontroller with proper example. 4 CLO2
4. Recently, Amit and Arafat have learned about Microcontroller 8051. However, they know that there is a pin that separates address and data lines and another pin that discards internal ROM but they are not able to recognize them. Help them by answering the following questions 4(a-b).
- 4(a) What are those two pins that are mentioned in the above passage? Briefly explain them. 7 CLO2
- 4(b) Give them a visual representation of Microcontroller 8051 by drawing a block diagram. 3 CLO2
- 5(a) What are the characteristics of an embedded system? What do you mean by hardware and software co-design? 4 CLO1
- 5(b) Briefly explain the modeling of embedded system behavior with a finite state machine model. 3 CLO1
- 5(c) What is a system on the chip? Explain with a diagram. Or Describe the components of Embedded system 3 CLO1