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Department of Computer Science and Engineering
B.Sc. in Electronics and Communication Engineering (B.Sc. ECE)
Semester Final Examination 2018
Level 3, Semester I, Course Code: CSE 317, Credit: 3.0
Course Title: Microprocessor and Embedded System Design

Time: 03 hours

Total Marks: 90

[N.B. The figure in the right margin indicates the marks allocated for respective question. Split answer of any question is not allowed.]

Section-A

*(Answer any **03(three)** from the following questions)*

1. (a) Define the terms: microprocessor and embedded system design.List few applications of microprocessor-based system. 3+2

   (b) Explain the architecture of intel8086microprocessor. Why 8086 internal architecture is divided into BIU and EU? 4+2

   (c) Explain the purpose of ***ALE, $\overline{BHE}$, DT/$\overline{R}$*** and ***$\overline{DEN}$*** pins of 8086. Show their timing in the system bus cycle of 8086 microprocessor. 2+2

2. (a) Explain the difference between 8085 and 8086 microprocessors. 4

   (b) Explain detail about the following addressing modes of 8086 microprocessors with examples. 4+2

   i. Relative addressing.
   ii. Based indexed addressing with displacement.

   (c) Define coprocessor. Explain control register of 8087 coprocessor. 2+3

3. (a) Explain the various assembler directives in 8086 microprocessor programming. 4

   (b) Given that DS = 2220_H, DI = 2198_H, and DX = $FF17_H$. Show the contents of memory locations after the execution of the following instruction and identify the addressing mode. 2+3

   MOV [BX+DI], CL

   (c) Draw and explain the appropriate pin diagram for the minimum and maximum mode operations of 8086. 6

4. (a) Briefly explain the addressing modes of 8085 microprocessor with necessary example. 5

   (b) What are the differences between memory mapped I/O and peripheral mapped I/O? 3

   (c) Briefly explain basic input interface circuit with necessary diagram. 3

   (d) What is polling? Explain with proper diagram, decoding of 8-Bit I/O port addresses starting from $F8_H$ address. 4

Section-B

(Answer any 03(three) from the following questions)

1.	(a)	What is DMA and why is it required?	2+3
	(b)	Explain different types of DMA operation.	5
	(c)	Draw the internal architecture of the 8254 programmable interval timer.	5
2.	(a)	Explain the initialization sequence of 8259.	3
	(b)	What is pipelining in 8086? How the 20-bit effective address is calculated in 8086 processor? Explain with an example.	3
	(c)	Draw the status register word format of 8254 programmable interval timer and explain.	2+3
	(d)	Explain, how does the master slave concept work in 8259 PIC.	4
3.	(a)	If port B and upper port C must be initialized as input ports and lower port C and port A as output ports (all in mode 1), then draw the control word format of 82C55.	3
	(b)	Explain different mode of operations of 8254 programmable interval timer.	7
	(c)	Explain the format of ICW2 in 8259.	5
4.	(a)	Draw the block diagram of 8259A PIC and explain their functionalities.	6
	(b)	Explain the different operational modes of 8259A PIC.	4
	(c)	Explain how does an 8-digit LED display interfaced to the 8086 microprocessors through an 82C55.	5