B.Sc. Engg. / HD CSE 5th Semester — 05 March 2019 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION — **WINTER SEMESTER, 2018-2019**

DURATION: 1 Hour 30 Minutes — **FULL MARKS: 75**

CSE 4503: Microprocessors and Assembly Language

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

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1. a) Differentiate between Assembly language and Machine Language. How are these related? 10

   b) Derive the contents of the `Flag` (`CF, PF, ZF, SF`) register of `8086` microprocessor upon executing the following instructions: 8

   i. `AND AL, FFh` ; Assume `AL` initially contains `FFh`.

   ii. `SUB AX, 8000h` ; Assume `AX` initially contains `8000h`.

   c) Write appropriate assembly language codes to accomplish the following tasks: 7

   i. 0Fh × (225 - 200) + 127

   ii. 0FFFh × 10h + 10101010b

2. a) Considering following memory segments, offsets and instructions, write the sequence of PUSH/POP operations on stack segment mentioning different Stack Pointer (SP) values. Assume, initially the stack segment is empty. 10

Segment	Offset	Assembly Language
1000h	0100h	`IN AL, 27h`
1000h	0102h	`MOV DL, AL`
1000h	0104h	`MOV AH, 1`
1000h	0106h	**`INT 21h`**
1000h	0108h	`ADD AL, DL`

   b) How do `8085` and `8086` microprocessors differ with each other in terms of flag register? 8

   c) "*Number of address locations and memory size have a close relation with the Address Bus length*" – How? Explain with example. 7

3. a) Write a short note on the registers set of 8085 microprocessor. 10

   b) Briefly explain the concept of stack memory and pointer of 8085 and 8086 microprocessors. 8

   c) Write an assembly language program structure to allocate exactly 64 Kbytes of memory for *code segment*, 512 Bytes for *stack segment* and also consider that the size for *data segment* may exceed 64 Kbytes. 7

4. a) Write a short note on *polling* and *interrupt* concepts. Which one is preferable and why? 10

   b) Write short notes on: 8

   i. Implied Addressing

   ii. Even and Odd memory bank.

   c) Explain the procedure to perform `NOT` and `NEG` operation in assembly language. 7