

(36)

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

MID SEMESTER EXAMINATION
DURATION: 1 HOUR 30 MINUTES

WINTER SEMESTER, 2022-2023
FULL MARKS: 75

**CSE 4573: Microprocessor and Assembly Language
 Programming**

Programmable calculators are not allowed. Do not write anything on the question paper.
Answer all 3 (three) questions. Figures in the right margin indicate full marks of questions.

1. a) Differentiate between assembly language and machine language. How are these two related? 10
- b) Write appropriate assembly language codes to accomplish the following tasks: 12
 - i. $0Fh \times (225-200) + 127$
 - ii. $0FFFh \times 10h + 10101010b$
- c) Write an elaborative assembly language code for RET. 3

2. a) Write an assembly language program 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. 10
- b) Suppose, Instruction Pointer (IP) of 8086 is moving in backward memory directions for executing the assembly language codes mentioned in Code Snippet 1: 12

```

1 MOV AX, FA1Ah
2 NEG AX
3 ADD AX, A1h

```

Code Snippet 1: Assembly Language Code for Question 2.b)

After the executions of all arithmetic and logical instructions in single-step debug mode with disabling interrupt option, what values would be there in AX and Flag (CF, PF, AF, ZF, SF, OF, IF, TF, and DF) registers?
- c) Differentiate between NEG and NOT instructions with example. 3

3. a) Differentiate between the register sets of 8085 and 8086 microprocessors. 10
- b) Derive the machine codes of the following instructions using their respective instruction format and also show how the machine codes of the instructions are to be stored in memory: 3x4
 - i. IN AX, ABH
 - ii. MOV ES:[BX + A1B2H], DX
 - iii. MOV BX, 01010101B
- c) In case of fetching a BYTE and WORD from the ODD and EVEN memory banks, how are the fetching cycles adjusted? Explain. 3