

**FEDERAL UNIVERSITY OF TECHNOLOGY**  
**SCHOOL OF ENGINEERING AND ENGINEERING TECHNOLOGY**  
**DEPARTMENT OF ELECTRICAL / ELECTRONIC ENGINEERING**  
**2009 / 2010 HARMATTAN SEMESTER EXAMINATION** **MAY 2010**

EEE 401: MICROPROCESSOR SYSTEMS & APPLICATION

TIME ALLOWED: 3HRS

**INSTRUCTION:** Attempt ALL Questions in section A and any two in section B

**Section A**

Q.1 Given two numbers: 06H and 0EH; an Assembly Language is written as below:

```
0200 04.06 01.0E
-A 0100
0100  MOV AX, 000
0103  MOV AL, [0200]
0106  ADD AL, [0201]
0106  MOV CL, AL
010C  MOV BL, 02
010E  DIV BL
```

- (i) Interpret what each line does?
- (ii) What value is output after instruction ADD AL is executed?
- (iii) What is the program meant to achieve?

Q.2 With the aid of a block diagram and flowchart approach, explain the operation of an 8085 Microprocessor based Traffic-light controller.

Q.3 Discuss various types of addressing modes of Intel 8085 with suitable example.

Q.4 (a) What are the difficulties in writing programs in machine language?

(b) What are the advantages of assembly language over machine language?

(c) Discuss the areas of applications of machine language, assembly language and high-level language.

**Section B**

Q.5 Develop a program to Exchange the contents of memory location 23D0H with the contents at memory location F230H.

Q.6 Develop a program to multiply two numbers stored in memory locations 0FA0H and 0FA1H respectively. The result is to be stored in memory locations 0FA2H and 0FA3H.

Q.7 The strong room of a bank has a microprocessor based lock. The lock opens when the 8-bits code fed from the manager's keyboard is found to be same as the 8-bit code of the cashier keyboard. Write a program to implement this?