K. N. I. T., SULTANPUR

(Paper code and roll No. to be filled in your answer book)

Roll No. 1 3 3 5 3

KEE-403

B.Tech.

Fourth Semester Examination, 2014-15

Microprocessors

Time: 3 Hours **Total Marks: 100**

Note: Attempt all questions. All questions carry equal marks.

1. Attempt any four parts of the following: **5x4=20**

(a) How the control signal are generated to read/write from/in IO/M devices.

(b) Describe the register architecture of 8086.

(c) Compare 8085 and 8086 microprocessors in terms of data processing and addressing capability.

(d) What are the instruction formats of 8086 microprocessor?

(e) Explain the memory mapping with example.

(f) Explain the function of tri-state devices and buffer used with 8085 microprocessor.

2. Attempt any two parts of the following: **10x2=20**

(a) Explain the function of following pins of 8085 microprocessor along with direction of signal

(i) READY (ii) $\overline{INTA}$ (iii) HLDA (iv) SOD (v) SID (vi) HOLD (vii) TRAP (viii) INTR (ix) RST 7.5 (x) RESET OUT

(b) Develop an assembly language programme for 8085 to add two binary numbers, each of 8 byte long. The numbers are stored from 8501-8509 and 8551 to 8558. The result is to be stored from 8661 to 8668.

(c) Explain the following instructions of 8085 with example.

(i) SHLD (ii) CPI (iii)DAA (iv) DAD (v) DCX (vi) LDAX (vii) RAR (viii) RST (ix) SPHL (x) STAX

3. Attempt any two parts of the following: **10x2=20**

(a) Explain data addressing modes in 8086 with example using MOV and ADD instructions.

(b) If (BX)= 0158, (DI)=10A5, displacement =1B57, and (DS) 2200, Calculate the effective and physical address for data addressing modes of 8086.

(c) Explain the following instructions in 8086 with example.
(i) NOT (ii) JCXZ (iii) MUL (iv) IDIV (v) ADC (vi) CMPS (vii) TEST (viii) XOR (ix) RCR

4. Attempt any two parts of the following: **10x2=20**

(a) Differentiate between minimum and maximum mode operation of 8086. Explain the interrupt sequence and type of interrupts in 8086.

(b) Draw and explain the internal architecture of 8259 interrupt controller. Also describe its initialization command words.

(c) In the opcode fetch, memory read, and memory write cycles, what are the control signals asserted by 8085 to enable the memory buffer.

5. Attempt any two parts of the following: **10x2=20**

(a) Describe the techniques to generate delays in software. Write a programme to generate a delay of 400 ms using 8086/ 8085 system that runs on 10 MHz frequency.

(b) Describe the internal architecture of 8254 programmable interval timer. Explain the control word format.

(c) Interface an 8255 with 8085 or 8086 to work as an I/O port. Initialize port A as input port, port B as output port and port C as output port. The address of port A, Port B, Port C and CWR is 0740, 0742, 0744 and 0746 respectively. Write a programme to sense 8 switch positions (10100110) connected at port A. The sensed pattern is to be displayed on port B, to which 8 LEDs are connected, while port C lower displays number of on switches out of the total eight switches.