**Exam Modules7 & 8**

**Section B**

Name ID Number

**Problem1** (7 points)

Fill out the blanks (note I am looking for the best answer):

1. Timers are used for:
   1. Internal timing
   2. Event counting, or
   3. Baud rate generation.
2. The 8051 timers are accessed using \_\_\_\_\_6\_\_\_\_\_\_ special function registers, and they are:

TCON, TMOD, TL0, TL1, TH0, and TH1

1. Serial port, in mode2 transmits or receives \_\_\_11\_\_\_\_\_\_ bits.
2. The baud rate in mode2 is \_\_\_\_\_\_\_\_\_1/32 and 1/64 on-chip oscillator.

**Problem2** (5 points)

Calculate TH1 reload value for the following configuration (show detailed calculation and explain):

Baud rate = 19200

Crystal frequency = 12.000 MHz

SMOD = 1

19200 = timer1 overflow rate/16

Timer1 overflow rate = 19200 \* 16 = 307200 = 307.2 KHz

1000 KHz/307.2 KHz ≈ 3 ⇒ Timer reload factor = -3 (11111101)

**Problem3** (8 points)

1. Fill out the address and machine code parts **in Hex**:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Line | address | Machine code |  | Mnemonic | Operand |
| 1 |  |  |  | ORG | 8100H |
| 2 |  |  | INPUT: | JNB | RI, $ |
| 3 |  |  |  | CLR | RI |
| 4 |  |  |  | MOV | A, SBUF |
| 5 |  |  |  | MOV | C, P |
| 6 |  |  |  | CPL | C |
| 7 |  |  |  | CLR | ACC.7 |
| 8 |  |  |  | RET |  |
| 9 |  |  |  | END |  |

1. What is the logic behind the aforementioned program (Note, I am looking for a short and concise answer)?

See class notes, module 8.