**EIE3105 Quiz 2**

**Interrupt**

1. **Set a Bit**

PORTB |= (1<<4);

TCCR0B = (1<<CS02) | (1<<CS01) | (1<<CS00);

1. **Clear a Bit**

PORTB &= ~(1<<4);

1. **Check a Bit**

PINB & (1<<5);

1. **Set as Input**

DDRB = 0x00;

PORTB = 0xFF; //Pull Up

1. **Read Input**

unsigned char var = PINB;

1. **Set as Output**

DDRB = 0xFF;

PORTB = 0x00; // Output 0;

PORTB = 0xFF; // Output 1;

1. **Toggle a Bit**

PORTB ^= (1<<0);

PORTB ^= (1<<0) | (1<<1) | (1<<2);

1. **TIMER POLLING**
   1. Timer 0: P106
   2. Timer 1: P134
   3. Timer 2: P158
2. TIMER0 Normal Mode

TCNT0 = 0xXX; // 256 – Time Count

TCCR0A = 0x00; // Normal Mode

TCCR0B = 0xXX; // Pre-scalar

while((TIFR0 & (1<<TOV0)) == 0); // Polling

TCCR0B = 0x00; // Stop Timer

TIFR0 = (1<<TOV0); // Reset Flag

1. TIMER0 CTC Mode

OCR0A = 0xXX; // Time Count – 1

TCCR0A |= (1<<WGM01); // CTC Mode

TCCR0B = 0xXX; // Pre-scalar

while((TIFR0 & (1<<OCF0A)) == 0); // Polling

TCCR0B = 0x00; // Stop Timer

TIFR0 = (1<<OCF0A); // Reset Flag

1. TIMER1 Normal Mode

TCNT1H = 0xXX; // High Byte

TCNT1L = 0xXX; // Low Byte

TCCR1A = 0x00; // Normal Mode

TCCR1B = 0xXX; // Pre-scaler

while((TIFR1 & (1<<TOV1) == 0); // Polling

TCCR1B = 0x00; // Stop

TIFR1 = (1<<TOV1); // Reset Flag

1. TIMER1 CTC Mode

OCR1AH = 0xXX; // High Byte

OCR1AL = 0xXX; // Low Byte

TCCR1A = 0x00; // CTC Mode

TCCR1B = 0xXX; // WGM12 = 1, CTC Mode

while((TIFR1 & (1<<OCF1A) == 0); // Polling

TCCR1B = 0x00; // Stop

TIFR1 = (1<<OCF1A); // Reset Flag

1. **TIMER INTERRUPT**
2. TIMER1 Interrupt

OCR1AH = 0x1E;

OCR1AL = 0x85;

TCCR1A = 0x00;

TCCR1B = (1<<WGM12) | (1<<CS12) | (1<<CS10);

TIMSK1 = (1<<OCIE1A);

1. TIMER0/COUNTER Interrupt

OCR0A = 0x01;

TCCR0A = (1<<WGM01);

TCCR0B = (1<<CS02) | (1<<CS01) | (1<<CS00);

TIMSK0 = (1<<OCIE0A);

1. **EXTERNAL INTERRUPT**

EIMSK = 0xXX; // INT0/INT1

EICRA = 0xXX; // Trigger