

University of Engineering and Technology Taxila

Sub Campus Chakwal

MID Semester Examination (Spring 2013)
2K11 Electronic Engineering (4th Semester)

Course Title: **Microprocessors and Microcontrollers**

Total Marks: 40
Time Allowed: 95 mins

NOTE Attempt all questions. Each Question as a whole carries 8 marks.

Q No.2. (4+4)

- Draw the diagram of **internal** architecture of 8051 pin. Explain briefly why we need to send 1 to a Port to make it an input ?
- Assume a scenario where a fan and a temperature sensor are connected to an 8051 microcontroller. The sensor's output is connected to microcontroller's pin **P2.1** and it gives **high** (1) whenever the temperature rises above 26°, otherwise it stays low (0). The relay that drives the fan is connected to pin **P3.1**. When we drive this pin **high** (1), the relay switches the fan **On** otherwise it keeps it off.

Write a program in assembly that monitors the sensor and whenever the temperature rises above 26 degree, it turns on the Fan otherwise the fan is kept off.

Q No.3. (4+2+2)

- Assume that register A has packed BCD, write a program in Assembly to convert packed BCD to two ASCII numbers and place them in R2 and R6.
- Draw the timer mode 2 operation block diagram.
- Calculate the Checksum byte for the following series of data:
25H, 32H, 64H, 72H.
Verify the checksum after calculating it.

Q No.4. (4+2+2)

- What is TMOD register? Describe briefly the function of its each bit.
- Calculate the **value** for Timer count in **mode 2** if we want to generate a delay of 200 us. (consider XTAL= 11.0592 MHz)
- Briefly** describe the function of following Pins.
 - EA
 - T0 and T1 (on P3)

Q No.5. (8).

- (a) Explain the different fields of **Intel Hex file**. Following line is given as example. Interpret the meaning of this line as well.

```
: CC AAAA TT DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD SS  
: 07 0020 00 DBFEDCFADDF622 35
```

Q No.6. (3+5) .

- (a) Assume XTAL = 11.0592 MHz, write a program to generate a square wave of 50 kHz frequency on pin P2.3.

Note: Use Timer in **Mode 1** and use **DC00H** as Timer Count.

- (b) Describe the five addressing modes of 8051 with the help of 1 example in each case.

=====Best of Luck=====