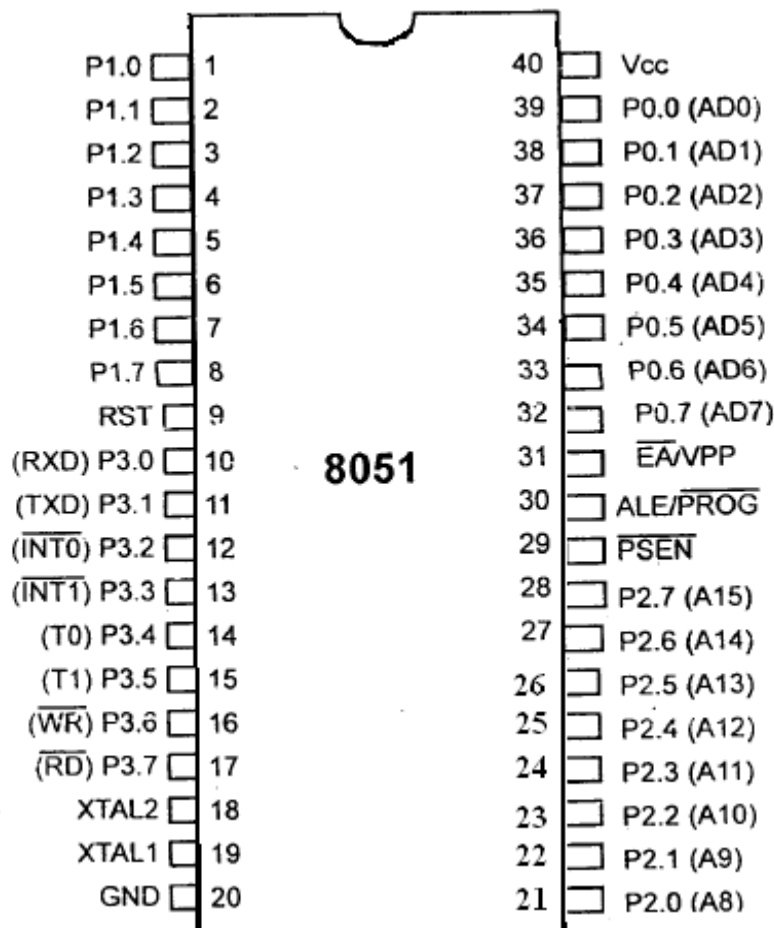


### 3.2 PINOUTS

The 8051 microcontroller is available as a 40 pin DIP chip and it works at +5 volts DC. Among the 40 pins, a total of 32 pins are allotted for the four parallel ports P0, P1, P2 and P3 i.e each port occupies 8-pins. The remaining pins are VCC, GND, XTAL1, XTAL2, RST, EA, PSEN.

#### XTAL1, XTAL2:

These two pins are connected to Quartz crystal oscillator which runs the on-chip oscillator. The quartz crystal oscillator is connected to the two pins along with a capacitor of 30pF as shown in the circuit. If we use a source other than the crystal oscillator, it will be connected to XTAL1 and XTAL2 is left unconnected.



**Figure 3.2.1 Pin Diagram of 8051 Microcontroller**

[Source: "Microprocessor Architecture Programming and Application" by R.S. Gaonkar, page- ]

#### RST:

The RESET pin is an input pin and it is an active high pin. When a high pulse is applied to this pin the microcontroller will reset and terminate all activities. Upon reset

all the registers except PC will reset to 0000 Value and PC register will reset to 0007 value.

### **EA (External Access):**

This pin is an active low pin. This pin is connected to ground when microcontroller is accessing the program code stored in the external memory and connected to Vcc when it is accessing the program code in the on chip memory. This pin should not be left unconnected.

### **PSEN (Program Store Enable) :**

This is an output pin which is active low. When the microcontroller is accessing the program code stored in the external ROM ,this pin is connected to the OE (Output Enable) pin of the ROM.

### **ALE (Address latch enable):**

This is an output pin, which is active high. When connected to external memory , port 0 provides both address and data i.e address and data are multiplexed through port 0 .This ALE pin will demultiplex the address and data bus .When the pin is High , the AD bus will act as address bus otherwise the AD bus will act as Data bus.

### **P0.0- P0.7(AD0-AD7) :**

The port 0 pins multiplexed with Address/data pins .If the microcontroller is accessing external memory these pins will act as address/data pins otherwise they are used for Port 0 pins.

### **P2.0- P2.7(A8-A15) :**

The port2 pins are multiplexed with the higher order address pins .When the microcontroller is accessing external memory these pins provide the higher order address byte otherwise they act as Port 2 pins.

### **P1.0- P1.7 :**

These 8-pins are dedicated for Port1 to perform input or output port operations.

### **P3.0- P3.7 :**

These 8-pins are meant for Port3 operations and also for some control operations like Read,Write,Timer0,Timer1 ,INT0,INT1 ,RxD and TxD