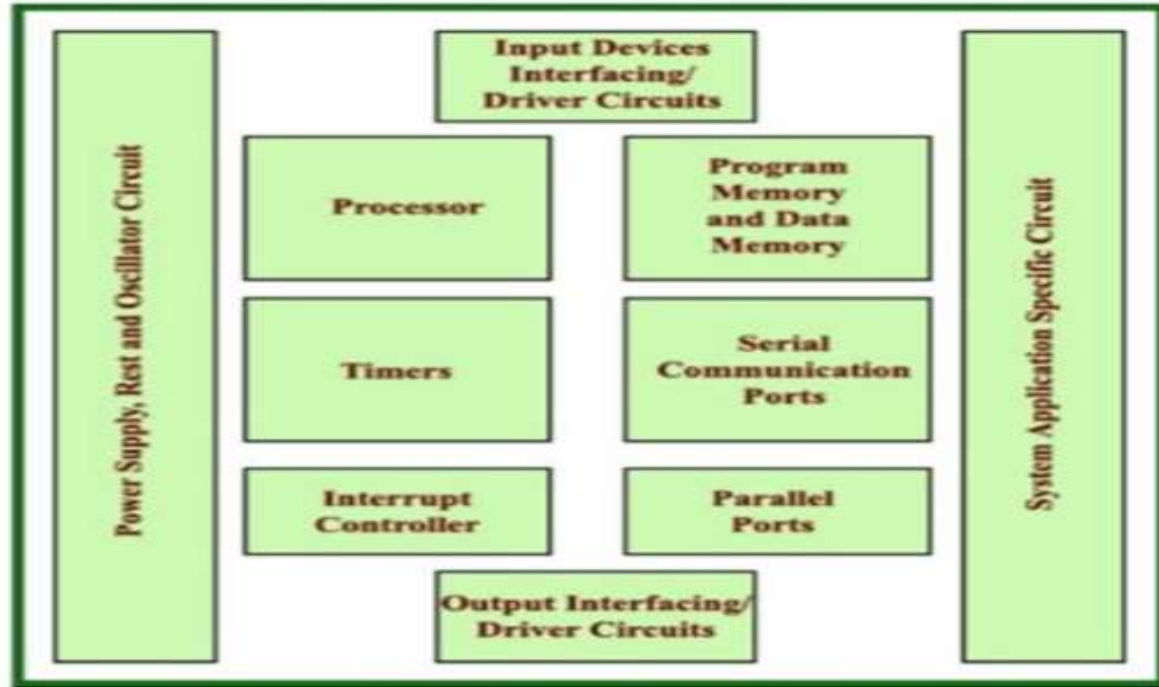# Block Diagram of Embedded System

Embedded processor: It is the heart of the embedded system. It has two essential units : control unit and execution unit. Control unit fetches instructions from memory and execution unit includes ALU and circuits to perform execution of the instructions for a program control task

Power supply, reset & oscillator circuit: Most of the systems have their own power supply. It may be powered by external power supply e.g. USB based embedded system.
 **Reset** means that processor begins processing of instructions from starting address set by default in program counter on power up.
The clock circuit controls execution time of instructions, CPU machine cycles.
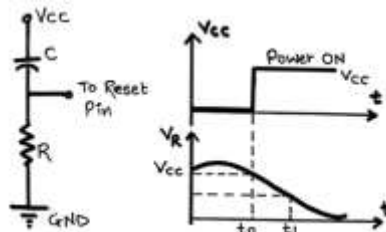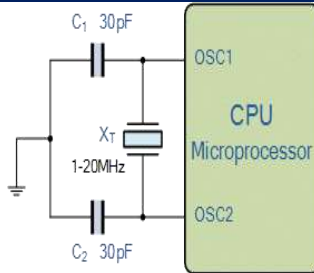
Specific Operation Range
5.0V +/- 0.25 v; 3.3V+/- 0.30V;
2.0V +/- 0.2v;
1.5V +/- .2 v

Interrupt controller: It is an interrupt handling mechanism which must exist in embedded system to handle interrupts from various processes and handling multiple interrupts simultaneously.
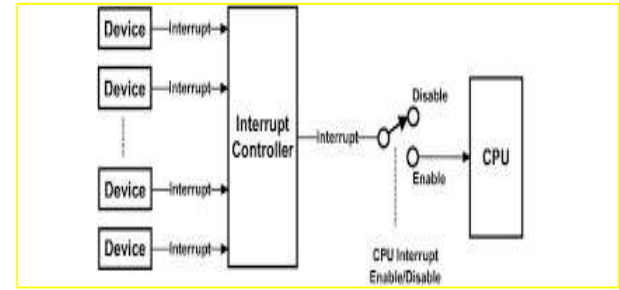

Timers: Timer circuit is suitably configured as system clock or RTC (Real time clock). To schedule various tasks and for real time programming an RTC, or system clock is needed

- Delay generating
- Counting
- Wave-form generating
- Capturing
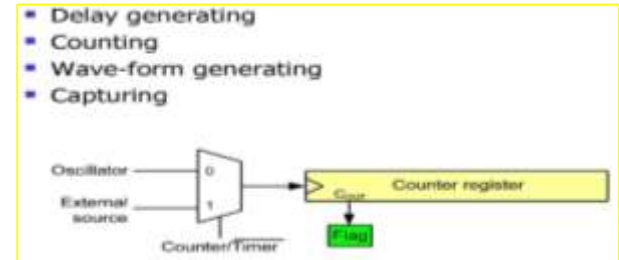
Program & data memory: In embedded system, secondary memory like disk is avoided. Most of the embedded processors have internal memory such as ROM, RAM, flash/EEPROM, EPROM/PROM for storing program and data.
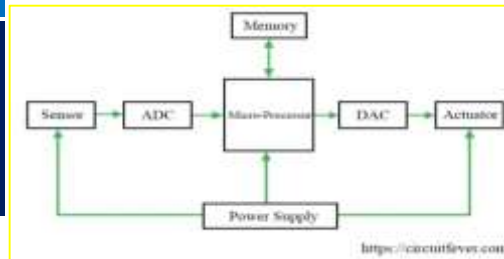
- Program ROM
- Data RAM
- DATA EEPROM
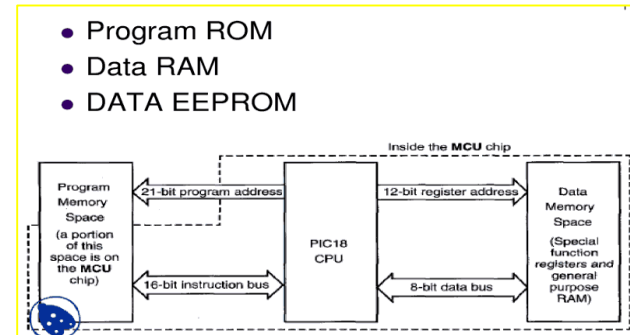
I/O ports: I/O ports are used to interface external devices like sensors, key buttons, transducers, LEDs, LCD actuators, alarms, motors, values, printer etc. There are two types of ports, parallel and serial port. The parallel ports are used in short distance communication while serial ports are used in long distance communication
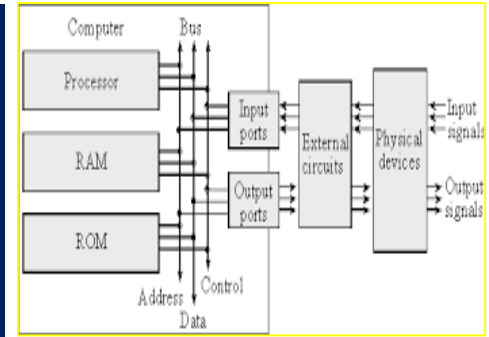
Input & output device interfacing/driver circuits: Some I/O devices like motors, actuators, valves, sensors are not compatible with the processor. Hence the I/O interface circuits are designed to drive such input and output devices interfaced to the embedded processor

System Application specific circuits: These are the circuits that can control specific target circuits. They consist of ADC, DAC, relays, sensors etc.

ATTEMPT THE QUIZ