Unit V
Computer Controlled Test Systems
The typical automatic test system requires mainly some data acquisition and analysis systems. They also require the proper programming and control capability. These systems are mainly used suitably for the testing of some device on a production line. Also they have extensive use at the maintenance facility. The application may vary from the component testing, such as capacitor, inductor testing, to the large testing such as electronic systems in the aircrafts.

![Diagram of Automatic Test System](image-url)

**Fig. 6.1 Automatic test system**
Fig. 6.4 Block diagram of a microprocessor based instrument

It consists of mainly the microprocessor and the IEEE 488 bus interface with the instruments so that the measurements are available to the large external computer system. The appropriate peripherals needed are selected according to the device which is to be tested.
6.7 Instruments used in Computer Controlled Instrumentation

In general, most of the test equipments or test instruments require some sort of modifications in the form of use of some special circuits so as to interface them with a computer. Depending upon the nature of test equipments, the modifications may be very simple as in case of some equipments or may be very significant in other equipments. For example the measuring instruments using any sort of mechanical device for the effective measurement are not suitable in computer controlled test systems. The meter movement in instruments or resistors and capacitors used in bridge are not suitable for computer controlled measurement systems. Such instruments need certain modification such that they can be used in computer controlled measurement system. Generally all the mechanical devices are replaced by purely electronic equivalents.

In general, the instruments used in the computer controlled instrumentation are,

i) Digital frequency counter

ii) Synthesized signal generator

iii) Relay switched attenuator

iv) Computer controlled spectrum, analyzer

v) Adjustable a.c. power supply
Fig. 6.9 Modified frequency counter
Fig. 6.10 Synthesized signal generator

Fig. 6.11 Computer interfaced spectrum analyzer
Fig. 6.12 Computer controlled adjustable a.c. power supply