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1. Signal processing is the removal of unwanted components, while presenting the proper level of voltage or current to the measuring instrument. The techniques used for signal processing are filtering, offset/level conversion, linearization and buffering.

**Filtering** is used to reject unwanted components of the signal.

**Offset/level conversion** changes the output signal of the transducer from one voltage level to another.

**Linearization** is passing the signal through a circuit that has a response that is the inverse of the transducer.

**Buffering** isolates the signal source from its load.

The two interfacing techniques are:

1. **IEEE 488 Standard and Bus**: the IEEE 488 interface bus provides the capability to interconnect up to 15 devices using a standard passive multiconductor cable. The purpose of the cable is to interconnect all devices in parallel.
2. **RS 232C standard**: This standard applies both synchronous and asynchronous communication systems. This interface standard is intended for fairly short cable runs and this standard specifies four types of lines which are data signals, control signals, timing signals and signal grounds.
3. We know that an expert system is a computer program or software that solves problems through the use of knowledge and inference that are difficult enough to require significant human expertise for their solution and we know that instrumentation are a collective term of measuring instruments that are used for indicating, measuring and recording physical quantities. Therefore, expert system instrumentation is the use of a software or program in measuring instruments to perform measurements that are difficult enough to require human expertise. The measuring instrument becomes an intelligent memory in the sense that when it wants to make a particular measurement, it refers to its knowledge stored in memory and solves the problem based on that knowledge and reasoning.