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Question 1answers

① Explain briefly the signal processing and interfacing techniques in measuring instruments

① Analogue signal processing: is for signals that have not been digitalized. This involves linear electronic circuits as well as non linear ones. The former are, for instance, passive filter, active filter additive mixers, integrators. Non linear circuits include multipliers voltage controlled filters etc

② Continous time: This signal processing is for signals that vary with change of continous domain. The methods of signal processing include time domain, frequency domain and complex frequency domain.

③ discrete time: This signal processing is for sampled signals, defined only at discrete points in time, and as such are quantized in time but not in magnitude. This is used in analog time division multiplexers

④ Digital signal processing: is the processing of digitalized discrete-time sample signals. processing is done by general purpose computers or by digital circuits such as ASICs, field-programmable gate arrays.

(5) Nonlinear

Nonlinear signal processing involves the analysis and processing of signals produced from nonlinear systems and can be in time, frequency, or spatio-temporal domains. Nonlinear systems can produce highly complex behaviors including bifurcations, chaos, harmonics etc

2. Explain briefly the expert system instrumentation

In artificial intelligence, an expert system is a computer system emulating the decision-making ability of a human expert. Expert systems are designed to solve complex problems by reasoning through bodies of knowledge, ~~represented~~ represented mainly as if-then rules rather than through conventional procedural code.