**Requirements for a Good Control Systems:**

a) **Accuracy:** Accuracy must be very high as error arising should be corrected. Accuracy can be improved by the use of feedback element.

b) **Sensitivity:** A good control system senses quick changes in the output due to an environment, parametric changes, internal and external disturbances.

c) **Noise:** Noise is an unwanted signal and a good control system should be sensitive to these type of disturbances.

d) **Stability:** The stable systems has bounded input and bounded output. A good control system should response to the undesirable changes in the stability.

e) **Bandwidth:** To obtain a good frequency response, bandwidth of a system should be large.

f) **Speed:** A good control system should have hight speed that is the output of the system should be fast as possible.

g) **Oscillation:** For a good control system oscillation in the output should be constant and must follow Barkhausein's Criteria.

**Open Loop and Closed Loop Control System**

Control action is the quality of a system which is responsible for activating the system in order to produce the output. The open loop and closed loop system are basically the parts of Control system. Depending on whether a control action performed should depend on the status of output, Control System are classified as

1) Open Loop Control System

2) Closed Loop Control System

**OPEN LOOP SYSTEM:**

An Open loop System is also known as the control system without feedback. These systems do not have any portion of output feedback to the input for comparison and measurement. The components of these system are: input, processing system and output.

**Advantages of Open loop Control System:**

- They are simple in constructions,
- They are economical in nature.
- Have stability problem.
Example of these systems are:

1. Immersion rod: in this how much heating is required is not measured by the rod.
2. Traffic Control System: this system is based upon the timer and not on the density of traffic.

CLOSED LOOP SYSTEM:

These system are also known as the system with feedback. In this system a portion of output is feedback to the input side which is compared with the reference element and thus the error occurred at that time is filtered out and output is desire output. The components of these system are: input, reference element, controller, processing system and output.

Advantages of Closed loop Control System:

- They reduces the effect of non-linearities.
- They are less economical in nature.
- These system are highly stable.

Example of these systems are:

1. Human Body: Human Body has the tendency to change its temperature and pressure is maintained according to the physiological change.
2. Automatic Electric Irons: An automatic Iron regulates the temperature of iron such that for the given cloth selection the temperature remains a specified range.