**Introduction:**

Corrosion is defined as loss in the useful properties of materials due to attack of atmospheric gases on the surface of materials. Corrosion destroys the objects made up of metals and their alloys but the modern world can not afford without the use of these materials. Corrosion may lead to loss of metals and their strength which in turn can cause serious accidents, loss of efficiency, manpower and human lives. Scientists are always interested in understanding the mechanism of corrosion and ways to control it. Numerous corrosion inhibitors have been developed to control the corrosion of metals and their alloys in various corroding systems. Any step in the direction of finding new corrosion inhibitors for any corroding system would not only lead to a significant saving but also help the engineers in running the plants and machinery without any problem arising due to corrosion phenomenon. The US is losing more than $276 billion and India is losing approximately Rs. 80,000 crore per annum on account of corrosion. Losses due to corrosion may be direct and indirect loss. Losses due to corrosion can be minimized by using proper corrosion management/protection methods.

Metallic state is the most energetic state and has very high tendency to revert back to its original form i.e. ore by a spontaneous process of corrosion, because this step proceeds from high energy to low energy state. Metallic alloys are not pure metal. They are formed by combination of two or more metals. Carbon steel, stainless steel and mild steel are the most common materials used for structural and fabrication purposes. Mild steel has remarkable economic and attractive materials for engineering
applications owing to its low cost, easy availability and high mechanical strength. The interest of the materials arises from their importance in recent civilization. Mild steel is widely used in body of trunks, desert coolers, storage tanks of food grains, boats and ships, engine parts etc. Carbon steel has remarkable economic and attractive materials for engineering applications owing to its low cost, easy availability and high mechanical strength. Stainless steel has remarkable attractive materials for engineering applications owing to its easy availability, possess good luster, corrosion resistance and high mechanical strength. Due to this, stainless steel is widely used in making utensils and other households wares. Main difference in the composition of these three metallic alloys is in its carbon content. Stainless steel has highest carbon content, due to this it possess highest mechanical strength and almost non corrosive in neutral aqueous solutions.

Inorganic acids cause heavy corrosion of carbon steel, stainless steel and mild steel and create problems in pipes, heat exchangers, boilers, condensation units etc. Dilute acids are often used in industries for cleaning of the clogged pipes lines due to scaling, fouling, algal and fungal growth. Acid cleaning is also performed for the removal of paints, coating and different organic solvents from the surface of carbon steel. Because of very aggressive nature (due to its strong oxidizing properties) of dilute inorganic acids, carbon steel, stainless steel and mild steel corrodes heavily in presence of dilute acids. Corrosion inhibitors formulation is required to minimize the corrosion of these different metallic alloys in acidic medium at different temperatures.
As temperature varies a lot in different types of industries and also from place to place in an industry. So, we have selected three different temperatures for investigation i.e. 30, 40 and 50 °C.