1>a>Hardness of water:- In scientific terms, water hardness is generally the amount of

dissolved calcium and magnesium in water.

Type of hardness of water :

i>Temporary Hardness

• Caused by the presence of dissolved bicarbonate of calcium,

magnesium and other heavy metals and the carbonate of iron.

ii>Permanent Hardness

• Contains chlorides or sulphates of calcium or magnesium or of both

• Can not be removed by boiling

b>you may notice water hardness when your

hands still feel slimy after washing with soap and water, or when your

drinking glasses at home become less than crystal clear.

d>• Drinking: Hard water causes bad effect on our digestive system.

Moreover, the possibility of forming calcium oxalate crystals in urinary

tracks is increased.

e>boiling , chlorination and alum are used to kill microorganisms present in water.

3>a>• Phase Rule was given by J. Willard Gibbs in 1875.

• Phase Rule is applicable to heterogeneous System.

• Phase Rule is very useful to understand the effect of intense variables

like Temperature, Pressure or Concentration on the equilibrium

between Phases (Solid, Liquid & Gas) as well as between the Chemical

Constituents.

• When equilibrium between any number of phases is influenced by

Temperature, Pressure and Concentration but not influenced by

gravity or electrical force or mechanical force or surface action then

degree of freedom (F) is related to number of components (C) and

number of phases (P) by following relation:

F + P = C + 2

b>• Curve BC is the fusion curve

• Solid CO2

is in equilibrium

with Liquid CO2

.

• This curve starts from Triple

Point ‘B’ and ends at Point ‘C’.

• At triple point ‘B’ all the three phases of CO2

co-exist in equilibrium

• curve AB, BD and BC meet.

• Solid CO2 = Liquid CO2 = Gas CO2

• So, No. of Phases= 3

• Hence the system is invariant at the triple point ‘B’ (-56.6°C and 5.11atm.)

d>ALLOYING is a process of mixing several different elements into one, it is used for many

reasons, primarily for: increasing strength, corrosion resistance, or for reducing costs.

In this presentation, our team will be looking at three different types of alloys to prove its

significance, those being:

Ferrous Alloys

Nichrome

Stainless Steel

Types of Carbon Steel

Low Carbon Steel (Up to 0.3%)

Medium Carbon Steel 0.3 -

1.25%)

High Carbon Steel (1.25 - 2%)

Ultra High Carbon Steel (2% or More)

5>Chemical vapor deposition (CVD) is a process where one or more

volatile precursors are transported via the vapor phase to the reaction

chamber, where they decompose on a heated substrate.

• CVD is a chemical process used to produce high-purity, high-

performance solid materials.

• This technique is suitable for preparing coatings, powders, fibers and

monolithic components and is often used in many thin film

applications.

