

College of Engineering, Pune

End Semester Examination (Nov-2013)

F Y B Tech

Duration :3hrs

Engineering Chemistry (AS-103)

Marks:60

Q.1. (A) Attempt the following- (4)

1) What is the number of phases when CaCO_3 is heated?

2) A gaseous Mixture contains NH_3 and HCl in the molar ratio of 1:2.

What is the number of Component of the systems?

3) A gas in equilibrium with its solution in a liquid. Calculate degree of freedom.

4) A solution of a solid in a liquid in equilibrium with solvent vapor. Calculate degree of freedom

(B) Give the composition, properties and Applications of stainless steel. (4)

(C) Explain the determination of copper from brass in detail. (4)

(OR)

(C) With the help of phase diagram, describe the salient features of

Lead-silver system.

Q.2. (A) What is Electrochemical corrosion? Explain the Mechanism of rusting of iron (4)
with a suitable diagram.

(B) Discuss the important factors affecting the rate of corrosion based on nature (4)
Of metal and environment .(minimum two from each)

(C) Give the principle, process, regeneration and advantages of an Ion exchange (4)
Process in short.

(OR)

(C) Give the comparison between Anodic and Cathodic coating with suitable

Examples. Justify which is the best.

Q.3. (A) Explain the important methods of Internal treatment of Boiler Feed (4)

Water (minimum two)

(B) What are the scales and sludges. Give their formation, disadvantages and (4)

Preventive measures in boiler.

(C) Describe Anodic protection of metal for corrosion control. (4)

(OR)

(C) Explain any three metallic properties based on band theory of metals.

Q.4. (A) Describe the principle, process and products of fractional distillation of crude oil (4)

(B) Explain the working of H₂-O₂ Fuel cell (4)

(C) Explain the different types of electronic transitions that occur in an (4)

Organic molecule after absorbing UV radiations.

(OR)

(C) What are Stretching and Bending Vibrations observed in IR Spectroscopy.

Q.5. (A) Describe the instrumentation required for Atomic Absorption spectrometer. (4)

(B) Give the difference in Octane number and Cetane number.

(C) Explain the pH metric titration of mixture of strong acid and weak acid (4)

Against standard alkali giving chemical reaction, titration curve and calculation (4)

(OR)

(C) Explain the titration curve for Potentiometric titration in case of strong acid and strong base titration.