Q.28 What are the different methods of water treatment, including internal and external treatment?

Q.29 Explain the significance of the enthalpy-entropy (h-s) diagram for water and steam (Mollier Chart) and describe the information it provides.

Q.30 What is "caustic embrittlement" in the context of water treatment?

Q.31 Differentiate between hard water and distilled water with its applications.

Q.32 Classify refrigerants into primary and secondary types and explain the differences between them.

Q.33 How are refractories classified based on their acidity or basicity?

Q.34 Define refractories and explain their significance industrial processes.

Q.35 How can insulation materials be classified, particularly in terms of cold insulation and low temperature insulation?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Describe about the zeolite process with its type and diagram.

Q.37 With construction and working, explain Babcock & Wilcox boiler with application

Q.38 Define and elaborate on important terms related to steam, such as wet steam, dry saturated steam, superheated steam, dryness fraction, sensible heat of water, latent heat of vaporization, enthalpy, and specific volume of steam.

6th Sem / Chem, P & P , Chem Engg. (Spl. Paint. Tech.)
Subject:- Process Plant Utilities / Proc. Utilities

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 What are the impurities commonly found in water that can affect its quality?
- a) Oxygen and nitrogen
- b) Dissolved minerals and organic matter
- c) Bacteria and viruses
- d) Hydrogen and helium

Q.2 What is the primary function of a subheater in a boiler system?
- a) To remove ash and soot
- b) To control boiler pressure
- c) To superheat steam
- d) To preheat feedwater

Q.3 What is the primary purpose of refrigerants in cooling systems?
- a) To generate heat
- b) To insulate against heat transfer
- c) To remove heat from a space or system
- d) To facilitate electrical conductivity

Q.4 What is the term for the unwanted accumulation of minerals deposits on the interior surfaces of boilers and pipes?

a) Priming b) Foaming
c) Corrosion d) Scaling

Q.5 Which of the following is an important refractory material known for its high alumina content and resistance to corrosion?
a) Fire clay b) Silica
c) High alumina d) Bauxite

Q.6 Full form of COD is
a) Chemical oxygen demand
b) chemical over depth
c) Both A & B
d) None of the above

Q.7 Which of the following is NOT a type of boiler?
a) Babcock Wilcox b) Nestler
c) Expansion d) Cochran

Q.8 What is the primary source of freshwater for most human consumption and industrial use?
a) Groundwater b) Rainwater
c) Seawater d) River water

Q.9 What is the primary purpose of insulation in industrial applications?
a) To generate heat
b) To resist high temperatures and corrosion
c) To insulate against heat transfer
d) To facilitate electrical conductivity

Q.10 The types of cooling towers are
a) natural cooling tower
b) foced draft cooling tower
c) Both A & B
d) None of above

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 What is hardness?

Q.12 _____ Process involved the use of lime and soda ash for water softening?

Q.13 Define insulation?

Q.14 Name any two Pumps used in industry.

Q.15 Write one use of Refractories.

Q.16 What is mass fraction?

Q.17 Expand EDTA

Q.18 Steam is_____

Q.19 One application of cooling tower?

Q.20 Name anyone important refrigerants commonly used in industrial refrigeration systems.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Give an overview of different types of boilers, including Cochran boilers in details.

Q.22 Explain the concepts of scale and sludge in the context of industrial boilers. What are the adverse effects of scale and sludge buildup in boilers?

Q.23 How is the selection of refrigerants determined for various cooling applications?

Q.24 Describe about Colloidal conditioning.

Q.25 Discuss about steam ejector.

Q.26 What are the key properties and characteristics of refractories.

Q.27 Define insulation and its role in maintaining temperature control in industrial processes.