Q.29 What is scaling? Write any for reasons for scale formation.

Q.30 Draw a neat sketch of jet ejectors.

Q.31 Explain the safe working properties of refrigerants.

Q.32 Explain the selection of refrigerants.

Q.33 Explain the cermets refractories.

Q.34 What are the important properties which are to be considered while selection of the insulating material for particular application.

Q.35 Explain natural draft cooling tower.

SECTION-D

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

Q.36 Explain ion-exchange process for water softening in detail along with reaction involved.

Q.37 Write the general method of manufacturing of refractories along with selection of refractories.

Q.38 Write a short note on the following:

a) Elecrodialysis

b) Mollier-chart

No. of Printed Pages : 4 180561/120561/030561

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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 The formation of scale in boiler leads to_____

a) Decrease in efficiency
b) Increases in efficiency
c) Increase in heat - transfer
d) Decrease in maintenance

Q.2 Hardness of water is conventionally expressed in terms of equivalent amount of_____.

a) H_2CO_3 b) $MgCO_3$
c) $CaCO_3$ d) Na_2CO_3

Q.3 Temporary hardness in water may be removed by_____.

a) Boiling b) freezing
c) decomposition d) none

Q.4 Which of the following is not the internal softening treatment of boiler feed water

a) Zeolite process
b) calgon conditioning
c) Carbonate conditioning
d) Phosphate conditioning

Q.5 The following is not accessory of a boiler

a) Pressure guage b) Safety valve

c) Fusible plug d) superheater

Q.6 Natural draft cooling tower have been used for

a) Large capacity of water

b) small capacity of water

c) high efficiency

d) low capital cost

Q.7 Steam is a

a) gas b) liquid

c) vapour d) None

Q.8 Which is neutral refractories.

a) graphite b) magnesite chrome

c) silica d) magnesia

Q.9 The example of brackish water is _____

a) ground water b) rain water

c) sea water d) underground water

Q.10 What is value of 1 ppm in mg L^{-1}?

a) 0 b) 1

c) 100 d) 1000

SECTION-B

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

Q.11 Write two sources of water?

Q.12 Write two suspended impurities in water?

Q.13 Temporary hardness of water is due to_____.

Q.14 Define dry saturated steam.

Q.15 Write one physical property of refrigerant.

Q.16 Expand PPM_____.

Q.17 What is neutral refractories.

Q.18 Out of low/high thermal conductivity bricks, which is more suitable for insulation purpose?

Q.19 What is the molecular formula of lime?

Q.20 Degree Clarke is the unit of_____.

SECTION-C

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

Q.21 Discuss the concept of phosphate conditioning.

Q.22 Explain Preheater in boiler.

Q.23 Define priming and foaming in boilers.

Q.24 Discuss about the properties of industrial water.

Q.25 Describe cold lime sofa process.

Q.26 What is caustic embrittlement? How it can be avoided?

Q.27 What are difference between acid refractories and basic refractories?

Q.28 What do you mean by cold insulation?