Q.18 Discuss about various sources of water. (CO1)

Q.19 Explain the quality of wet steam. (CO3)

Q.20 Differentiate between permanent hardness and temporary hardness? (CO1)

Q.21 Discuss the ion exchange process. (CO2)

Q.22 Write the properties of inert gasses. (CO4)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 What are the refrigerants? Describe the important thermodynamic, physical and safe working properties of refrigerants in detail. (CO4)

Q.24 Explain the formation of steam at constant pressure with neat and clean diagram. Discuss various terms used during formation of steam. (CO3)

Q.25 Write short note on the following :

a) Caustic embrittlement. (CO1)

b) Calgon conditioning. (CO1)

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5th Sem / Chemical, Chemical (Pulp & Paper)

Subject : Process Plant Utilities

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Temporary hardness in water may be removed by _____ (CO1)

a) Boiling b) Freezing

c) Decomposition d) None

Q.2 Insulation types are (CO4)

a) Cold insulation

b) Low temperature insulation

c) Both (a) & (b)

d) None of the above

Q.3 Thermal insulation is used primarily to: (CO4)

a) Increase the heat transfer rate

b) Prevent heat loss or grain

c) Store energy

d) Enhance mechanical strength

Q.4 Steam is a (CO3)

a) gas b) liquid

c) Vapour d) None

Q.5 The main purpose of cooling towers is to : (CO4)

a) Increase the temperature of water

b) Reject heat to the environment

c) Condense refrigerant gas

d) Circulate refrigerant within the system

Q.6 What is the molecular formula of soda ash? (CO2)

a) Na_2CO_3 b) $AI_2(SO_4)_3$

c) $Mg(OH)_2$ d) $Ca(OH)_2$

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 What is wet steam? (CO3)

Q.8 Name any two air utility used in industry. (CO3)

Q.9 What are refrigerants? (CO4)

Q.10 Define softening? (CO2)

Q.11 Write one use of inert gas? (CO3)

Q.12 What is the molecular formula of lime? (CO2)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Discuss about screening and sedimentation. (CO2)

Q.14 Discuss the instrumental air and its uses. (CO3)

Q.15 Classify different types of refrigerants. (CO4)

Q.16 Discuss about impurities of water. (CO1)

Q.17 What are the important properties which are to be considered while selection of the insulating material for particular application. (CO4)