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5th Semester/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 The purest form of water is _____? (CO1)

a) Rain water b) River water
c) Lake water d) Sea water

Q.2 Which of the following process is water purification process? (CO2)

a) Filteration b) Sedimentation
c) Sterilization d) All of above

Q.3 Which type of steam is formed when saturated steam is heated further? (CO3)

a) Saturated steam b) Superheated steam
c) Wet steam d) Dry steam

Q.4 A primary refrigerant is _____? (CO4)

a) carbon dioxide b) Ethylene glycol
c) Brine solution d) None of these

SECTION-D

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

Q.23 Describe the following terms:

a) Priming (CO1)
b) Boiler corrosion (CO1)
c) Compressed Air (CO3)
d) Importance of insulation for process equipment (CO4)

Q.24 Explain construction and working of forced draft cooling tower in detail. (CO4)

Q.25 Explain Zeolite process for softening of water in detail with the help of neat diagram. (CO4)

Q.5 Thermodynamic property of refrigerant is classified as _____? (CO4)

a) Freezing point b) Toxicity

c) Flammability d) Viscosity

Q.6 A good insulating material should have _____ thermal conductivity as well as _____ density. (CO4)

a) Low, high b) Low, low

c) high, low d) high, high

SECTION-B

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

Q.7 1 ppm = _____ mg/l.(Inter-relation of unit of hardness). (CO1)

Q.8 Temporary hardness is due to soluble bicarbonates of calcium and magnesium. (True/False) (CO1)

Q.9 Nitrogen is an inert gas that is commonly used in food packaging pharmaceuticals industry. (True/False) (CO3)

Q.10 Write the name of any one external method for water softening. (CO2)

Q.11 Define Refrigerant. (CO4)

Q.12 Define insulation. (CO4)

SECTION-C

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

Q.13 Discuss the different impurities of water. (CO1)

Q.14 Write a short note on the following: (CO2)

a) Carbonate condition

b) Phosphate conditioning

Q.15 Explain Caustic embrittlement and its prevention. (CO1)

Q.16 Describe Coagulation and Filtration process. (CO2)

Q.17 Draw a 'Temperature Vs Heat added' graph of the steam formation at constant pressure. (CO3)

Q.18 Discuss Instrumental air and write uses of air. (CO3)

Q.19 Write a short note on followings:

a) Freon-11 refrigerant (CO4)

b) Saturated and superheated steam (CO3)

Q.20 Explain Cold thermal insulation with example in brief. (CO4)

Q.21 Explain any two safe working properties of an ideal refrigerant. (CO4)

Q.22 What are the important properties of a good insulator? (CO4)