



VIT[®]
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test – I
Fall semester 2019-2020

B. Tech Chemical Engineering

CHE1010 – Process Plant Utilities

Class Number: VL2019201006574 Slot: F2+TF2 Exam Duration: 90 min Max. Marks: 50

General instruction(s):

Any missing data can be suitably assumed after giving the justification for the same

Part - A Answer ALL Questions (5×10=50 Marks)

1. In recent times, Chennai city is currently facing severe water crisis due to several reasons, the depletion of surface water being a major factor. Underground water is available with average composition as given below.
pH=9.2; conductivity=5.8 S/cm; TDS=1750ppm; TSS=300ppm; Salinity=275 g/l; COD=2000 ppm
As a process engineer, design a proper sequence of unit operations and processes for treating the underground water to drinking quality. Support the choice of processes and operation with a proper technical justification.
2. Citing the importance of boiler feed water, discuss in detail about the various methods of removing Iron, Manganese and Hydrogen sulfide from boiler feed water.
3. With a neat sketch, explain the construction and working of the Cochran boiler. Highlight the advantages and limitations of this boiler type.
4. Classify the different type of industrial compressors specifying their features and applications. Also, comment on the various factors for selection of compressor for a given purpose.
5. Differentiate plant air from instrument air. Discuss in brief about instrument air package.