

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

REG.NO.:

SCHOOL OF CHEMICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2025-2026

SLOT: C1+TC1+TCC1

Programme Name & Branch : B.Tech Chemical Engineering
Course Code and Course Name : BCHE304L Chemical Process Technology & Economics
Faculty Name(s) : Dr. M. Aslam Abdullah
Class Number(s) : VL2025260101246
Date of Examination : 7th Oct, 2025
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
- Draw Flowsheet using scale, pencil and pro-circle
- For comparative based questions, write 10 points in each topic
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- **Course Outcomes**
 1. **CO3:** Identify the manufacturing processes in the fertilizer industry.
 2. **CO4:** Describe Sugar, Soap manufacturing and Petroleum refining.

Q. No.	Question	Max Marks	CO	BL
	Compare continuous catalytic reforming and FCC Process for the purification of desired petroleum products	10	4	3
	Explain the changes encountered in the system when the following recommendations were made? a) Use of Mixer unit instead of blender unit during manufacture of Soap b) Hydrolyzer operating at pressure more than 45 atm during manufacture of soap c) Segregation of converter, super heater and waste heat recovery boiler as individual units during nitric acid manufacture d) Replacement of Water Spray condenser with Air spray condenser in electric furnace method	10	3	2
	A company plans to study the feasibility by integrating (combining) production of wood pulp by sulfate process and production of white liquor from black liquor (black liquor is used as feed from sulfate process). During the integration (combining), the following recommendations were suggested by the company. (i) Use of Blender instead of Mix Tank (ii) Use of Single Effect Evaporator System instead of multiple effect evaporator system	10	4	4



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- (iii) Separation of boiler unit and combustion chamber and use as individual units rather than fused chamber.
- (iv) Use of Electrostatic precipitator instead of Cottrell Precipitator
- (v) Use of Centrifugation unit instead of Clarifier unit which recovers the sludge from green liquor
- (vi) Continuous digester unit to be segregated into 3 separate (individual) units based on difference in Temperature.
- (vii) Avoid using Lime Slaker unit. Treat the lime directly into the causticizing tank

Draw a neat flowsheet and report as a single flowsheet incorporating all the suggestions recommended by the company during integrating (combining) production of wood pulp by sulfate process.

Differentiate between primary refining and secondary refining processes

10

Explain the role of Field engineer in chemical engineering processing plant

10
