

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:3144402

Date:19-07-2023

Subject Name:Unit Process

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Differentiate between unit process and unit operation.	03
(b) Classification of unit process with examples.	04
(c) Describe the characteristic features and factor affecting of unit process.	07
Q.2 (a) Write different hydrogen production technologies and properties.	03
(b) Difference between catalytic hydrogenation and hydrogenolysis.	04
(c) Briefly explain kinetics and thermodynamics of hydrogenation reaction.	07
OR	
(c) Briefly explain chemical and physical factor in sulfonation and sulfation.	07
Q.3 (a) List out different nitrating agent.	03
(b) Write chemical reaction for nitration of benzene, nitration of toluene, nitration of phenol and nitration of glycerine.	04
(c) Process for the production of m-dinitrobenzene with reaction, principle and use.	07
OR	
Q.3 (a) Which reagent used in béchamp reduction, sulfide reduction, sulfite reduction?	03
(b) Explain metal and alkali reductions.	04
(c) Briefly explain for preparation of aniline and p-aminophenol.	07
Q.4 (a) List out various halogenating agent.	03
(b) Chlorination of methane and ethane.	04
(c) Manufacturing process of allyl chloride with major engineering problem.	07
OR	
Q.4 (a) List out various oxidizing agent.	03
(b) Explain kinetics and thermodynamic considerations	04
(c) Manufacturing process of Chloroacetic acid with major engineering problem.	07
Q.5 (a) Discuss about oxidation reactions.	03
(b) List out regents for esterification and alkylation reaction.	04
(c) Manufacturing process of vinyl chloride with major engineering problem.	07
OR	
Q.5 (a) Discuss about reactive extraction with examples.	03
(b) State advantages of reactive distillation over reactive extraction and reactive absorption.	04
(c) With neat diagram discuss the working and industrial application of reactive distillation.	07