

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2023****Subject Code:3140508****Date: 06-02-2024****Subject Name: Unit Processes & Chemical Technology****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) Explain the mechanism of alkylation of benzene.	03
	(b) Explain nitration and sulfonation of benzene with reaction mechanism.	04
	(c) Explain DCDA process with major Engineering problems	07
Q.2	(a) Discuss the theories of colour and constitution	03
	(b) What is dye? How are dyes classified on the basis of structure?	04
	(c) Explain the manufacturing process of vinyl sulphone dye with neat sketch diagram.	07
	OR	
	(c) Explain the manufacturing process of H-acid dye with neat sketch diagram.	07
Q.3	(a) Write a note on Direct dyes.	03
	(b) Explain the mining of sulfur by frasch methods.	04
	(c) Explain the manufacturing process of caustic soda by membrane cell.	07
	OR	
Q.3	(a) Write a note on Azo dyes.	03
	(b) Explain the claus process for sulfur.	04
	(c) Explain the manufacturing process of Urea with major engineering problems	07
Q.4	(a) What is PVC ratio? Why paints are failure many times?	03
	(b) Write a note on white pigments.	04
	(c) Explain the manufacturing process of paints with neat flow diagram	07
	OR	
Q.4	(a) Explain the role of Pigments/Resin/Binder as an ingredients used in paint	03
	(b) Write a note on ZnO as a pigment	04
	(c) Explain the manufacturing process of sugar from sugar cane	07
Q.5	(a) What are antibiotics?	03
	(b) Explain preparation of Phenobarbital with chemical reaction	04
	(c) Explain the manufacturing process of penicillin with flow diagram	07
	OR	
Q.5	(a) Explain setting and hardening of cement with chemical reaction.	03
	(b) Write basic prerequisites of good fermentation process.	04
	(c) Explain the manufacturing process of cement with flow diagram.	07
