

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV(NEW) EXAMINATION – WINTER 2022****Subject Code:3140508****Date:16-12-2022****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**

- |            |  |           |
|------------|--|-----------|
| <b>Q.1</b> | (a) Explain the nitration of benzene with an example.  | <b>03</b> |
|            | (b) Briefly explain the classification of drugs.   | <b>04</b> |
|            | (c) Describe the process of manufacturing of sulphuric acid with flow diagram and reactions.       | <b>07</b> |
| <b>Q.2</b> | (a) What are dyes and pigments, explain.   | <b>03</b> |
|            | (b) Classify the dyes on the basis of application.   | <b>04</b> |
|            | (c) Give the detailed process for manufacturing of caustic soda and chlorine using diaphragm.      | <b>07</b> |
| <b>OR</b>  |  |           |
|            | (c) Give the detailed process for manufacturing of H-acid.   | <b>07</b> |
| <b>Q.3</b> | (a) List the fat soluble and water soluble vitamins.   | <b>03</b> |
|            | (b) Write the reactions involved in synthesis of aspirin.  | <b>04</b> |
|            | (c) Explain the process for extraction, isolation and purification of vitamin D with flow diagram. | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.3</b> | (a) What is absolute alcohol? State the uses of industrial alcohol.                                | <b>03</b> |
|            | (b) What are the thinners and varnishes?   | <b>04</b> |
|            | (c) Design the process flow diagram for manufacturing of citric acid.                              | <b>07</b> |
| <b>Q.4</b> | (a) What is refractory? Give their industrial applications.  | <b>03</b> |
|            | (b) Give process diagram for recovery of white liquid from black liquid in manufacturing of pulp.  | <b>04</b> |
|            | (c) With a neat schematic diagram, explain the manufacturing of cement by dry process.             | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.4</b> | (a) What is role of digester in pulp manufacturing?  | <b>03</b> |
|            | (b) Explain the settling and hardening of cement.  | <b>04</b> |
|            | (c) With a neat schematic diagram, explain the manufacturing of building bricks.                   | <b>07</b> |
| <b>Q.5</b> | (a) What is cracking of hydrocarbons and its use in petroleum industries?                          | <b>03</b> |
|            | (b) Write the reactions for synthesis of 3-nitrochlorobenzene from benzene.                        | <b>04</b> |
|            | (c) Write brief description on processing of petroleum and treatment techniques                    | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.5</b> | (a) Explain one example of reductive alkylation of aniline. Write chemical reaction.               | <b>03</b> |
|            | (b) Polymer industries depends on petrochemical industries, explain.                               | <b>04</b> |

- (c) Give suitable process for manufacturing of nitric acid. Explain its advantages over other processes. **07**

\*\*\*\*\*