

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-IV (NEW) EXAMINATION – WINTER 2024****Subject Code:3140508****Date:26-11-2024****Subject Name:Unit Processes & Chemical Technology****Time:02:30 PM TO 05:00 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

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| Q.1 | (a) Write applications of drugs. | 03 |
| | (b) Write the stepwise mechanism of Alkylation of benzene. | 04 |
| | (c) Write notes on: Antibiotics, Industrial Alcohol, Petrochemicals, Paints, Oxidation, Reduction, NPK | 07 |
| Q.2 | (a) Write intermediates of following unit processes: nitration, acylation, chlorination. | 03 |
| | (b) Write detailed classification of dyes on the basis of their constitution. | 04 |
| | (c) Explain following terms: Unit Process, Vitamin D, Drugs, Varnishes, Citric acid, Vitamin B12, Refining | 07 |
| | OR | |
| | (c) Construct process flow Diagram of manufacturing of H acid also explain it with the help of reactions. | 07 |
| Q.3 | (a) Give details of manufacturing process of Caustic soda. | 03 |
| | (b) Review/support importance of Unit processes in chemical Industries. | 04 |
| | (c) Explain pulp manufacturing by Kraft process with the help of relevant diagram. | 07 |
| | OR | |
| Q.3 | (a) Compare and contrast between membrane cell and Diaphragm process. | 03 |
| | (b) Give details about pros and cons of advancements of Chemical Industries. | 04 |
| | (c) Explain manufacturing of cement by wet process with required reactions and diagram. | 07 |
| Q.4 | (a) Write applications of various pigments. | 03 |
| | (b) What is hardening of cement, explain with the help of reactions. | 04 |
| | (c) Construct neat flow diagram for peniciline and state its major engineering problems. | 07 |
| | OR | |
| Q.4 | (a) Write a note on refractories. | 03 |
| | (b) Discuss about ceramic materials. | 04 |
| | (c) Explain DCDA process of manufacturing of sulphuric acid with major engineering problems involved. | 07 |
| Q.5 | (a) Give a note on constituents of paints. | 03 |
| | (b) Discuss the chemistry of C1, C2 petrochemicals. | 04 |
| | (c) Describe Following terms: Varnish, Thinners, Vat dyes, Pigments, Ascorbic acid, barbital, Fertilizer | 07 |

OR

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| Q.5 | (a) Write difference between catalytic and thermal cracking. | 03 |
| | (b) Construct process flow diagram for manufacturing of citric acid. | 04 |
| | (c) Give details of the manufacturing process of sugar from sugar cane with the help of diagram. | 07 |
