

[50]

SARDAR PATEL UNIVERSITY  
ON DEMAND EXAMINATION  
B.Sc. INDUSTRIAL CHEMISTRY (3<sup>rd</sup>-SEMESTER)  
US03CICH01: (Heavy and Fine Chemicals)  
Monday, 13<sup>th</sup> June - 2022

Time: 12:00 pm to 2:00 pm

Total Marks: 70

Note: Figures to the right indicate full marks.

Q.1 Answer the given multiple choice questions. (All are compulsory) [10]

- The gases used for welding and cutting of iron and steel are \_\_\_\_\_.  
(a) SO<sub>2</sub> (b) N<sub>2</sub> (c) Cl<sub>2</sub> (d) Oxy-acetylene
- Which is the process used for manufacturing H<sub>2</sub>SO<sub>4</sub>?  
(a) Contact (b) Kellogs (c) Habber (d) Solvay's ammonia
- Which acid is also called as MURIATIC acid \_\_\_\_\_.  
(a) HCl (b) H<sub>3</sub>PO<sub>4</sub> (c) HNO<sub>3</sub> (d) H<sub>2</sub>SO<sub>4</sub>
- The soda ash is manufactured by \_\_\_\_\_ process  
(a) Castner-Kelner (b) Solvay's ammonia  
(c) Diaphragm cell (d) Mercury cathode cell
- The raw material for NaOH manufacture of \_\_\_\_\_.  
(a) Na<sub>2</sub>CO<sub>3</sub> (b) NaHCO<sub>3</sub> (c) CaCO<sub>3</sub> (d) None of these
- Resistance electric furnaces are used for the raw material having \_\_\_\_\_.  
(a) Low thermal resistance (b) Very high thermal resistance  
(c) Sublimed matters (d) radiation
- Sand is the raw material for manufacture of \_\_\_\_\_.  
(a) Silicon carbide (b) Synthetic graphite  
(c) Calcium carbide (d) Boron carbide
- Acetylene gas can be produced by the reaction of water with \_\_\_\_\_.  
(a) SiC (b) CaC<sub>2</sub> (c) Graphite (d) Boron nitride
- 1,4-Dioxane is a six membered \_\_\_\_\_.  
(a) Ketone (b) Ester (c) Cyclic diether (d) Alcohol
- The boiling point of THF is \_\_\_\_\_ °C  
(a) 96 (b) 66 (c) 78 (d) 88

Q.2 Are the following statements TRUE or FALSE? (All are compulsory) [08]

- H<sub>2</sub>SO<sub>4</sub> can be used as dehydrating agent.
- The super saturated in water is called as oleum.
- Chemical formula of soda ash is NaHCO<sub>3</sub>.
- H<sub>2</sub>O<sub>2</sub> is used as a bleaching agent.
- Lime is the raw material for manufacturing of Calcium carbide.
- Electro thermal industries use electricity as a source of radiation.
- Base catalyst used in the manufacturing of Dioxane from diethylene Glycol.
- Manufacturing of ether is done by reaction of alkylhalides with alkoxide.

**Q.3 Answer the following short questions (Attempt any 10 out of 12)**

**[20]**

1. Write industrial uses of sulphur dioxide.
2. Give uses of Nitrogen.
3. Write any four uses of  $\text{HNO}_3$ .
4. Write uses of  $\text{Na}_2\text{CO}_3$ .
5. What is the different electrolyte cells used in manufacturing of  $\text{NaOH}$ ?
6. What are the sources of common salt?
7. Give the sources of magnesium metal.
8. Give the uses of Hydroxyl amine.
9. Write the advantage of electric furnace.
10. Write the properties of the dioxane.
11. Write the uses of the THF.
12. Write the properties of the DMF.

**Q.4 Answer the following Long questions (Attempt any 4 Out of 8)**

**[32]**

1. Explain the manufacturing process of Hydrogen by using neat diagram.
2. Write the manufacturing process of Sulphuric acid by lade chamber process by using suitable diagram.
3. Write a short note on (a) Baking powder (b)  $\text{NaCl}$
4. Write the manufacturing process of  $\text{Na}_2\text{CO}_3$  by Solvay process.
5. Explain the classification of electric furnace and the criteria of their selection.
6. Explain in detail about  $\text{MgCl}_2$  from sea water and  $\text{Mg}$  from carbon-thermal process.
7. Write the manufacturing of: (a) THF (b) DMF
8. Explain the manufacturing process of Diethyl ether and Dioxane.