

Total No. of printed pages = 3

**END SEMESTER (REGULAR/RETEST)  
EXAMINATION, JUNE - 2024**

Semester : 4th (Regular)

Branch : Chemical Engineering

Subject Code : Ch-402

**INDUSTRIAL CHEMICAL PROCESS-I**

Full Marks = 70

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

**Instructions :**

- (i) Question Nos. 1 and 2 are compulsory.
- (ii) Answer any five questions from the rest.

1. Fill in the blanks :  $1 \times 10 = 10$

- (a) The catalyst used in the manufacture of sulphuric acid by Contact process is \_\_\_\_\_.
- (b)  $O_2 + 2H_2 \rightarrow H_2O$  is the reaction for \_\_\_\_\_.
- (c) \_\_\_\_\_ is the reaction for Isomerization.
- (d) Temporary hardness is removed by \_\_\_\_\_.

[Turn over

(e) \_\_\_\_\_ process is used for removing permanent hardness.

(f) Sludge is formed due to \_\_\_\_\_.

(g) Sea water is most \_\_\_\_\_.

(h) Castner process is used for manufacturing of \_\_\_\_\_.

(i) Oleum is used for \_\_\_\_\_ manufacture.

(j) \_\_\_\_\_ process is used for manufacture of  $\text{HNO}_3$ .

2. Answer the following questions :  $1 \times 5 = 5$

(a) What causes turbidity of water ?

(b) Name the Chemical which causes permanent hardness.

(c) Name the Chemical which causes temporary hardness.

(d) Write down the reaction for the manufacture of  $\text{HNO}_3$ .

(e) Where Soda lime process is used ?

3. Describe the ion exchange process for removal of permanent hardness of water with diagram. 11

