



C20-CHPP-CHPC-CHOT-402

7471

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DCHPP – FOURTH SEMESTER EXAMINATION

PROCESS TECHNOLOGY

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the operating conditions for the manufacture of NH_3 .
2. List one industrial application of each of the following :
 - (a) Urea ($\text{CO}(\text{NH}_2)_2$)
 - (b) Phosphoric acid H_3PO_4
 - (c) Ammonium sulphate $(\text{NH}_4)_2\text{SO}_4$
3. Summarize various scales formed and their removal due to impurities present in water.
4. List the industrial applications of (a) N_2 , (b) O_2 and (c) CO_2 .
5. Describe the concept of fermentation method.
6. State the mechanism of catalytic cracking process.
7. Summarize the components present in (a) coal gas, (b) water gas and (c) producer gas.
8. List the raw materials required for the manufacture of soap.

9. Define and state inversion of sugar.
10. Mention the differences between thermoset and thermoplastic.

PART—B

8×5=40

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Explain the manufacture of nitric acid (HNO_3) by ammonia oxidation method with the help of a neat flow diagram.

(OR)

- (b) Explain the manufacturing process of hydrochloric acid (HCl) with the help of a neat flow diagram.

12. (a) Explain the process of purification of water by ion-exchange method with the help of a neat flow diagram.

(OR)

- (b) With a neat flow diagram, explain the manufacture of urea by total recycle method, using NH_3 and CO_2 .

13. (a) State the manufacturing of O_2 and N_2 by liquefaction and rectification of air using Linde double column rectifier and main condenser by using a neat diagram.

(OR)

- (b) State the manufacture of CO_2 from molasses by using a neat flow diagram.

14. (a) Explain the process of extraction of vegetable oil from seeds using mechanical expeller and solvent extraction method with the help of a neat flow diagram.

(OR)

- (b) Explain the recovery of glycerine from soap with the help of a neat flow diagram.

15. (a) Explain the manufacture of butadiene with the help of a neat flow diagram.

(OR)

(b) Explain the manufacture of styrene with the help of a neat flow diagram.

PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Justify the reasons to conduct vacuum distillation of reduced crude to obtain various petroleum products.

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