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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DCHST – FOURTH SEMESTER EXAMINATION

MASS TRANSFER OPERATIONS—I

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. Define unit process.

2. Classify mass transfer operations.

3. Define eddy diffusion with example.

4. Define flux.

5. Define cascade.

6. Define mass transfer coefficient.

7. Draw a neat sketch of rectification section in distillation.

8. Define optimum reflux ratio.

9. Define absorption.

10. List various types of tower packings used in industry.

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. Explain about membrane separation.

(OR)

Explain the phenomena of mass transfer operation.

12. Explain the unit operation that depends on diffusion.

(OR)

Explain the terms less volatile component and more volatile component.

13. Explain about stage efficiency.

(OR)

Explain about two-film theory.

14. State Rayleigh's equation.

(OR)

With a neat sketch, explain the sieve tray column in distillation.

15. With a neat sketch, explain the absorption operation in packed column.

(OR)

Explain the material balance for absorption tower.

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. 100 kmol/h of a feed containing 35 mole % methanol is to be continuously distilled in a fractionating column to get 96.5 mole % methanol as a distillate and 10 mole % methanol as a bottom product. Find the molal flow rates of the distillate and the bottoms.

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