

Marks:30	Duration:1.15Hrs.

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided f

**Marks CO**

**Question No. 1**

- 1 a) Explain Cornell's method for calculating height of transfer unit based on gas and liquid phase with necessary expressions. (7) CO1

**Question No. 2**

- 2 a) Discuss on choice of plate or packings in distillation column for separation (4) CO1  
 2 b) Explain design variables in distillation. (4) CO1

**OR**

- 2 c) Explain the various column internals with their importance. (4) CO1  
 2 d) Explain Van Winkle's correlation with necessary equations (4) CO1

**Question No. 3**

- 3 a) Calculate the thickness of torispherical head (100-6) and (80-10) respectively and elliptical head (2:1) for vessel having 1 m diameter and design pressure 3.8 kg/cm<sup>2</sup>. welded joint efficiency is fully tested. Permissible stress of MoC=1250 kg/cm<sup>2</sup>. (7) CO2

**Question No. 4**

- 4 a) What are the pressure vessels. Explain various types of pressure vessels in process industries. (4) CO2  
 4 b) Explain various Components of pressure Vessels with necessary diagrams. (4) CO2

**OR**

- 4 c) Explain in detail Classification of the pressure vessels. (4) CO2  
 4 d) What are the different types of stresses induced in thin walled pressure vessels. (4) CO2

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