

KATHMANDU UNIVERISTY  
End Semester Examination  
May/June, 2022

Level : B.E.  
Year : III  
Time : 2 hrs. 30 mins.

Course : CHEG 310  
Semester : II  
F.M. : 40

SECTION "B"

[4 Q. × 5 = 20 marks]

Attempt *ANY FOUR* questions.

1. Define exchanger. Mention their types along with the application. Draw schematics of any two exchangers and name them. How scaling affects this equipment? [1+1+2+1]
2. Define drying. Mention few methods of drying. List out the important factors affecting the rate of drying. Name any two dryers, and explain their working with diagram. [1+1+1+2]
3. Explain principle of membrane separation process with the help of a diagram. What is the driving force for MSP? Explain with diagram the types of flow through membrane. Mention three advantages of membrane process. [2+1+1+1]
4. How simple distillation differs from fractional distillation and compare them. Explain the working of fractional distillation with diagram. Name any two types of reboiler that could be used with fractional distillation. Name any two types of trays used in column and explain its working principle. [1+2+1+1]
5. Mention the objectives of size reduction. What are the factors affecting size reduction? Differentiate between crusher and grinder. Explain the working of jaw crusher along with diagram. Why is the ball mill preferred in cement industry? [1+1+1+1+1]

SECTION "C"

[5 Q. × 4 = 20 marks]

Attempt *ANY FIVE* questions.

6. Mention principle of ESP & give an example of its usage. What are magnetic separators? Explain its working with the diagram. [2+1+1]
7. What is NRV? Mention the use of pressure relief valve in industry. Explain how pressure relief valve is different from vacuum relief valve. [1+1+2]
8. How jet mixer differs from jet ejector? Explain the working of jet ejector with diagram. Define sparging and mention possible use of it. [2+1+1]

9. Define pneumatic conveying. Differentiate between pressure/vacuum conveying. Explain the working of cyclone separator with diagram. [1+1+2]
10. How clarifier differs from thickener? Explain the working principle of lamella (parallel plate or tube) clarifier with a diagram. [2+2]
11. Explain 'CV' with respect to mixing operation. Define segregation. Mention few reasons for segregation. [1+1+2]