

Course Questions Short Test No. 2

Chemical Engineering - Unit Operations II.

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Q1. Drying as a unit operation primarily involves:

- A. Chemical transformation of solids
- B. Removal of liquid by vaporization
- C. Mechanical separation of solids
- D. Cooling of wet materials

Q2. Which of the following moisture types can be removed by mechanical methods?

- A. Bound moisture
- B. Adsorbed moisture
- C. Free (unbound) moisture
- D. Capillary moisture

Q3. Moisture content on a wet basis is defined as:

- A. Water mass / dry solid mass
- B. Water mass / air mass
- C. Dry solid mass / total mass
- D. Water mass / total mass

Q4. Hygroscopic materials are characterized by their ability to:

- A. Absorb moisture from the environment Resist heat transfer
- B. Repel water
- C. Resist heat transfer
- D. Evaporate quickly

Q5. Why is drying usually performed after mechanical separation processes?

- A. Mechanical methods remove all moisture
- B. Mechanical methods are more expensive
- C. Mechanical methods cannot remove bound moisture
- D. Drying reduces particle size

Q6. In drying, the driving force for internal moisture movement is:

- A. Temperature gradient only
- B. Pressure gradient only
- C. Moisture concentration gradient
- D. Gravity

Q7. Which drying mode is most suitable for large-scale industrial production?

- A. Batch drying
- B. Tray drying
- C. Freeze drying
- D. Continuous drying

Q8. In direct drying:

- A. Heat is transferred through a solid wall
- B. The material is in direct contact with hot gas
- C. No gas-solid contact occurs
- D. Radiation is the only mechanism

Q9. During the constant-rate drying period:

- A. Surface is saturated with moisture
- B. Internal diffusion controls the process
- C. Drying rate decreases continuously
- D. Moisture content is constant

Q10. The equilibrium moisture content corresponds to:

- A. Maximum drying rate
- B. Zero drying rate condition
- C. Start of drying
- D. Maximum moisture removal

Q11. Which parameter mainly controls drying during the falling-rate period?

- A. External air velocity
- B. Air temperature
- C. Surface evaporation
- D. Internal moisture diffusion

Q12. A material is dried under identical external conditions, but drying slows significantly after a certain point. What is the most plausible explanation?

- A. Increase in air humidity
- B. Reduction in external heat transfer
- C. Transition from surface evaporation to internal diffusion control
- D. Decrease in drying surface area