

KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

Marks Scored:

Level : B.E.

Year : II

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : CHEG 210

Semester : II

F. M. : 10

Date :

11 FEB 2025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. What is the Grainer process used for?
a. Purification of salt
b. Extraction of brine
c. Production of flake salt
d. Production of rock salt
2. In vacuum evaporation used in industrial salt production, why is a vacuum applied?
a. To prevent salt from dissolving
b. To lower the boiling point of water
c. To separate impurities from the salt
d. To improve the crystal size
3. What is the by-product of caustic soda production in the chlor-alkali process?
a. Hydrogen peroxide
b. Sodium sulfate
c. Potassium hydroxide
d. Hydrogen gas
4. Which compound is used as an ammonia source in the Solvay process?
a. Calcium carbonate
b. Sodium carbonate
c. Ammonium chloride
d. Ammonium hydroxide
5. The concentration of hydrochloric acid obtained from the burner process is typically around:
a. 10–15% b. 25–30% c. 35–40% d. 50–55%
6. Which two substances are reacted in the burner process to produce hydrogen chloride gas?
a. Sodium chloride and sulfuric acid
b. Hydrogen and chlorine
c. Sodium chloride and water
d. Hydrogen chloride and oxygen
7. Which of the following processes for caustic soda production is considered the most energy-efficient?
a. Mercury cell b. Diaphragm cell c. Membrane cell d. Solvay process
8. What is the purpose of the absorption tower in the Contact Process?
a. To oxidize SO_2 to SO_3
b. To absorb SO_3 in water or concentrated H_2SO_4
c. To remove impurities from SO_2
d. To heat the gas mixture
9. What is the role of gypsum in the production of Portland cement?
a. To regulate the setting time of cement
b. To increase the strength of cement
c. To act as a binding material
d. To improve the grinding efficiency

10. In the float glass process, the molten glass is floated on which material to form a flat sheet?
 - a. Tin
 - b. Mercury
 - c. Water
 - d. Aluminum
11. Which of the following ensures the smooth and flawless surface of the glass in the float glass method?
 - a. High pressure in the furnace
 - b. Chemical additives
 - c. Molten tin's surface tension
 - d. Rapid cooling process
12. Which of the following processes is used for shaping refractory products?
 - a. Casting
 - b. Extrusion
 - c. Pressing
 - d. All of the above
13. What is the primary principle behind the PSA process for gas separation?
 - a. Cryogenic cooling of air
 - b. Adsorption of specific gases on molecular sieves
 - c. Compression and liquefaction of air
 - d. Chemical reaction with absorbents
14. What is the main advantage of the PSA process over the cryogenic process for oxygen and nitrogen production?
 - a. Higher purity of gases
 - b. Better efficiency for small-scale production
 - c. Lower operational cost for large-scale production
 - d. Ability to produce liquefied gases directly
15. In activated sludge treatment, what is the role of aeration?
 - a. To remove large solids
 - b. To provide oxygen for microbial activity
 - c. To remove heavy metals
 - d. To disinfect wastewater
16. Which chemical is commonly used in the chlorination process for disinfection?
 - a. Calcium hypochlorite
 - b. Ferric chloride
 - c. Aluminum sulfate
 - d. Sodium bicarbonate
17. Which of the following techniques is used for granulating NPK fertilizers?
 - a. Prilling
 - b. Fluidized bed granulation
 - c. Roller compaction
 - d. Screening
18. What is the role of high pressure and temperature in the urea manufacturing process?
 - a. To ensure complete mixing of ammonia and water
 - b. To increase the solubility of urea in water
 - c. To promote the conversion of ammonia and carbon dioxide into urea
 - d. To prevent the formation of ammonium carbonate
19. Which of the following is a major safety concern during the manufacture of white phosphorus?
 - a. Production of toxic carbon monoxide
 - b. High flammability of white phosphorus
 - c. Generation of sulfur dioxide
 - d. Formation of nitrogen oxides
20. The main byproduct of potassium chloride production through the Sylvite flotation method is:
 - a. Sodium chloride
 - b. Magnesium chloride
 - c. Calcium carbonate
 - d. Sodium sulfate