

**\*\*\* EXAMINATION \*\*\***

**PRECIPITATION COAGULATION FLOCCULATION**

1. **The alkaline reagent is used to**
  - a) raise the solution pH
  - b) lower the solubility of the metallic constituent
  - c) bring about precipitation
  - d) All of the above
  
2. **Hydroxide precipitation effectively removes**
  - a) cadmium
  - b) iron
  - c) manganese
  - d) All of the above
  
3. **The number of moles of a solid precipitate that will dissolve in a**
  - a) liter of solution is solubility
  - b) liter of solution is portability
  - c) liter of solution is immersibility
  - d) liter of solution is clarification
  
4. **In a supersaturated solution, the product of the molar concentrations**
  - a) of ions is less than the solubility-product constant
  - b) of ions is greater than the solubility-product constant
  - c) of ions is equal to the solubility-product constant
  - d) of ions is half of the solubility-product constant
  
5. **Actual solubilities may be lower than theoretical solubilities**
  - a) because of flocculation
  - b) because of binding
  - c) because of coprecipitation
  - d) Any of the above
  
6. **Soluble molecules or ions, which can act to form complexes**
  - a) with metals are called ligands
  - b) with metals are called chelating agents
  - c) with metals are called pinchers
  - d) with metals are called citrates

7. **Solubilities of inorganic and metal precipitates generally**
- a) decrease with increasing solution temperatures
  - b) increase with increasing solution temperatures
  - c) remain the same with increasing solution temperatures
  - d) None of the above
8. **A common precipitation agent is**
- a) sodium hydroxide
  - b) zinc hydroxide
  - c) iron hydroxide
  - d) cadmium hydroxide
9. **A disadvantage of hydroxide precipitation is the non-removal of**
- a) zinc
  - b) nickel
  - c) silver
  - d) iron
10. **The advantage of lime precipitation is**
- a) its low cost
  - b) ability to pump
  - c) ability to be effective
  - d) All of the above
11. **The advantage of caustic soda over lime is ease of**
- a) storage
  - b) handling
  - c) pumping
  - d) All of the above
12. **The advantage of using magnesium oxide is**
- a) sludge volumes are smaller than using lime
  - b) lower cost than lime
  - c) lower cost than caustic soda
  - d) both b and c
13. **The disadvantage of sulfide precipitation is**
- a) the higher cost versus magnesium oxide precipitation
  - b) the release of hydrogen sulfide gas
  - c) the limited number of metal ions precipitated
  - d) All of the above
14. **The disadvantage of carbonate precipitation is the**
- a) high cost
  - b) inability to filter precipitates
  - c) leaching of metals
  - d) All of the above

15. **The disadvantage of xanthate precipitation is**
- a) the large amounts of generated sludge
  - b) the inability to selectively remove metals
  - c) its low degree of metal removal
  - d) All of the above
16. **An extremely efficient coagulant is**
- a) water
  - b) lead
  - c) alum
  - d) None of the above
17. **The rate of flocculation depends on**
- a) the presence of charges
  - b) the shape of the particles
  - c) the density of the particles
  - d) All of the above
18. **Polyelectrolytes that ionize to form positive sites are**
- a) anionic
  - b) cationic
  - c) non-ionic
  - d) bionic
19. **The design of mixing vessels considers**
- a) bottom scour
  - b) flow distribution
  - c) short circuiting
  - d) All of the above
20. **A common flow equalization technique is**
- a) intermittent flow diversion
  - b) heating
  - c) cooling
  - d) None of the above

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