

Registration form

Water Quality CEU Training Course \$150.00
RUSH PROCESS FEE ADDITIONAL \$50.00 ONLY IF NECESSARY

Start and Finish Dates: _____
You will have 90 days from this date in order to complete this course

Name _____ Signature _____
I have read and understood the disclaimer notice on page 2. Digitally sign XXX

Address _____

City _____ State _____ Zip _____

Email _____ Fax (____) _____

Phone:
Home (____) _____ Work (____) _____

Operator ID # _____ Exp Date _____

Class/Grade _____
Your certificate will be mailed to you in about two weeks.

Please circle/check which certification you are applying the course CEU's.
Water Treatment _____ Distribution _____ Collection _____ Wastewater Treatment _____
Pretreatment _____ Other _____

Your certificate will be mailed to you in about two weeks.

Technical Learning College
Western Campus
PO Box 420, Payson AZ 85547-0420
Fax (928) 272-0747 Back-up Fax (928) 468-0675
(928) 468-0665 Toll Free (866) 557-1746
info@tlch2o.com

Discover card _____ CCV code on card _____
American Express _____
Visa or MasterCard # _____ Exp. Date _____

If you've paid on the Internet, write your Customer # _____

Invoice me, PO # _____

DISCLAIMER NOTICE

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I also understand that this type of study program deals with dangerous conditions and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors or omissions or advice contained in this CEU education training course or for any violation or injury caused by this CEU education training course material. I will call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded.

State Approval Listing Link, check to see if your State accepts or has pre-approved this course. Not all States are listed. Not all courses are listed. If the course is not accepted for CEU credit, we will give you the course free if you ask your State to accept it for credit.

Professional Engineers; Most states will accept our courses for credit but we do not officially list the States or Agencies. Please check your State for approval.

State Approval Listing URL...

<http://www.tlch2o.com/PDF/CEU%20State%20Approvals.pdf>

You can obtain a printed version of the course manual from TLC for an additional \$79.95 plus shipping charges.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

We will stop mailing the certificate of completion so we need your e-mail address. We will e-mail the certificate to you, if no e-mail address; we will mail it to you.

Thank you...

Water Quality Answer Key

Name _____

Phone # _____

Please Bold, Circle, Underline or X, one answer per question.

- | | | |
|-----------|-----------|------------|
| 1. ABCDE | 44. ABCDE | 87. ABCDE |
| 2. ABCDE | 45. ABCDE | 88. ABCDE |
| 3. ABCDE | 46. ABCDE | 89. ABCDE |
| 4. ABCDE | 47. ABCDE | 90. ABCDE |
| 5. ABCDE | 48. ABCDE | 91. ABCDE |
| 6. ABCDE | 49. ABCDE | 92. ABCDE |
| 7. ABCDE | 50. ABCDE | 93. ABCDE |
| 8. ABCDE | 51. ABCDE | 94. ABCDE |
| 9. ABCDE | 52. ABCDE | 95. ABCDE |
| 10. ABCDE | 53. ABCDE | 96. ABCDE |
| 11. ABCDE | 54. ABCDE | 97. ABCDE |
| 12. ABCDE | 55. ABCDE | 98. ABCDE |
| 13. ABCDE | 56. ABCDE | 99. ABCDE |
| 14. ABCDE | 57. ABCDE | 100. ABCDE |
| 15. ABCDE | 58. ABCDE | 101. ABCDE |
| 16. ABCDE | 59. ABCDE | 102. ABCDE |
| 17. ABCDE | 60. ABCDE | 103. ABCDE |
| 18. ABCDE | 61. ABCDE | 104. ABCDE |
| 19. ABCDE | 62. ABCDE | 105. ABCDE |
| 20. ABCDE | 63. ABCDE | 106. ABCDE |
| 21. ABCDE | 64. ABCDE | 107. ABCDE |
| 22. ABCDE | 65. ABCDE | 108. ABCDE |
| 23. ABCDE | 66. ABCDE | 109. ABCDE |
| 24. ABCDE | 67. ABCDE | 110. ABCDE |
| 25. ABCDE | 68. ABCDE | 111. ABCDE |
| 26. ABCDE | 69. ABCDE | 112. ABCDE |
| 27. ABCDE | 70. ABCDE | 113. ABCDE |
| 28. ABCDE | 71. ABCDE | 114. ABCDE |
| 29. ABCDE | 72. ABCDE | 115. ABCDE |
| 30. ABCDE | 73. ABCDE | 116. ABCDE |
| 31. ABCDE | 74. ABCDE | 117. ABCDE |
| 32. ABCDE | 75. ABCDE | 118. ABCDE |
| 33. ABCDE | 76. ABCDE | 119. ABCDE |
| 34. ABCDE | 77. ABCDE | 120. ABCDE |
| 35. ABCDE | 78. ABCDE | 121. ABCDE |
| 36. ABCDE | 79. ABCDE | 122. ABCDE |
| 37. ABCDE | 80. ABCDE | 123. ABCDE |
| 38. ABCDE | 81. ABCDE | 124. ABCDE |
| 39. ABCDE | 82. ABCDE | 125. ABCDE |
| 40. ABCDE | 83. ABCDE | 126. ABCDE |
| 41. ABCDE | 84. ABCDE | 127. ABCDE |
| 42. ABCDE | 85. ABCDE | 128. ABCDE |
| 43. ABCDE | 86. ABCDE | 129. ABCDE |

- | | | |
|------------|------------|------------|
| 130. ABCDE | 171. ABCDE | 212. ABCDE |
| 131. ABCDE | 172. ABCDE | 213. ABCDE |
| 132. ABCDE | 173. ABCDE | 214. ABCDE |
| 133. ABCDE | 174. ABCDE | 215. ABCDE |
| 134. ABCDE | 175. ABCDE | 216. ABCDE |
| 135. ABCDE | 176. ABCDE | 217. ABCDE |
| 136. ABCDE | 177. ABCDE | 218. ABCDE |
| 137. ABCDE | 178. ABCDE | 219. ABCDE |
| 138. ABCDE | 179. ABCDE | 220. ABCDE |
| 139. ABCDE | 180. ABCDE | 221. ABCDE |
| 140. ABCDE | 181. ABCDE | 222. ABCDE |
| 141. ABCDE | 182. ABCDE | 223. ABCDE |
| 142. ABCDE | 183. ABCDE | 224. ABCDE |
| 143. ABCDE | 184. ABCDE | 225. ABCDE |
| 144. ABCDE | 185. ABCDE | 226. ABCDE |
| 145. ABCDE | 186. ABCDE | 227. ABCDE |
| 146. ABCDE | 187. ABCDE | 228. ABCDE |
| 147. ABCDE | 188. ABCDE | 229. ABCDE |
| 148. ABCDE | 189. ABCDE | 230. ABCDE |
| 149. ABCDE | 190. ABCDE | 231. ABCDE |
| 150. ABCDE | 191. ABCDE | 232. ABCDE |
| 151. ABCDE | 192. ABCDE | 233. ABCDE |
| 152. ABCDE | 193. ABCDE | 234. ABCDE |
| 153. ABCDE | 194. ABCDE | 235. ABCDE |
| 154. ABCDE | 195. ABCDE | 236. ABCDE |
| 155. ABCDE | 196. ABCDE | 237. ABCDE |
| 156. ABCDE | 197. ABCDE | 238. ABCDE |
| 157. ABCDE | 198. ABCDE | 239. ABCDE |
| 158. ABCDE | 199. ABCDE | 240. ABCDE |
| 159. ABCDE | 200. ABCDE | 241. ABCDE |
| 160. ABCDE | 201. ABCDE | 242. ABCDE |
| 161. ABCDE | 202. ABCDE | 243. ABCDE |
| 162. ABCDE | 203. ABCDE | 244. ABCDE |
| 163. ABCDE | 204. ABCDE | 245. ABCDE |
| 164. ABCDE | 205. ABCDE | 246. ABCDE |
| 165. ABCDE | 206. ABCDE | 247. ABCDE |
| 166. ABCDE | 207. ABCDE | 248. ABCDE |
| 167. ABCDE | 208. ABCDE | 249. ABCDE |
| 168. ABCDE | 209. ABCDE | 250. ABCDE |
| 169. ABCDE | 210. ABCDE | |
| 170. ABCDE | 211. ABCDE | |

Please fax the answer key to TLC Western Campus Fax (928) 272-0747.

We will stop mailing the certificate of completion so we need your e-mail address. We will e-mail the certificate to you, if no e-mail address; we will mail it to you.

Back-up fax (928) 468-0675

Please e-mail or fax this survey with your final exam

**WATER QUALITY CEU TRAINING COURSE
CUSTOMER SERVICE RESPONSE CARD**

NAME: _____

E-MAIL _____ PHONE _____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.
Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.
Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.
Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course? _____

5. What would you do to improve the Course?

How about the price of the course?

Poor ____ Fair ____ Average ____ Good ____ Great ____

How was your customer service?

Poor ____ Fair ____ Average ____ Good ____ Great ____

Any other concerns or comments.

Water Quality CEU Training Course Assignment

The Water Quality Assignment is available in Word on the Internet for your convenience, please visit www.ABCTLC.com and download the assignment and e-mail it back to TLC.

You will have 90 days from receipt of this manual to complete it in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % or better is necessary to pass this course. If you should need any assistance, please email or fax all concerns and the completed **ANSWER KEY** to info@tlch2o.com.

The Surface Water Treatment Rule requires systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

1. _____: 99.9% killed/inactivated

- A. Legionella
- B. Viruses
- C. Giardia lamblia
- D. Turbidity
- E. Both B and C

2. No limit, but EPA believes that if _____ and viruses are inactivated, Legionella will also be controlled.

- A. Fecal coliform and E. coli
- B. Viruses
- C. Giardia lamblia
- D. Turbidity
- E. None of the Above

3. At no time can _____ (cloudiness of water) go above 5 nephelometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month.

- A. Fecal coliform and E. coli
- B. Viruses
- C. Giardia lamblia
- D. Turbidity
- E. None of the Above

4. No more than 500 bacterial colonies per milliliter.

- A. Fecal coliform and E. coli
- B. Viruses
- C. Giardia lamblia
- D. HPC
- E. None of the Above

5. _____ are bacteria whose presence indicates that the water may be contaminated with human animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms.
- A. Fecal coliform and E. coli
 - B. Viruses
 - C. Giardia lamblia
 - D. Turbidity
 - E. None of the Above
6. A public water system that serves at least 15 service connections used by year-round residents of the area served by the system or regularly serves at least 25 year-round residents.
- A. Sole Source Aquifer (SSA) Designation
 - B. Source Water Protection Area (SWPA)
 - C. Significant Potential Source of Contamination
 - D. Sub watershed
 - E. None of the Above
7. An analysis to determine, with a clear understanding of where the significant potential sources of contamination are located, the susceptibility of the public water systems in the source water protection area to contamination from these sources. This analysis will assist the state in determining which potential sources of contamination are "significant."
- A. Susceptibility Analysis
 - B. State Management Plan (SMP) Program
 - C. Significant Potential Source of Contamination
 - D. Surface Water Treatment Rule (SWTR)
 - E. None of the Above
8. One gallon of pure _____, a common solvent, will contaminate approximately 292 million gallons of water.
- A. Trichloroethylene
 - B. Microbes
 - C. Contaminants
 - D. Coliform bacteria
 - E. None of the Above
9. _____ are common in the environment and are generally not harmful.
- A. Trichloroethylene
 - B. Microbes
 - C. Contaminants
 - D. Coliform bacteria
 - E. None of the Above
10. MCLs are enforceable standards. The margins of safety in _____ ensure that exceeding the MCL slightly does not pose significant risk to public health.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above
11. _____ were not established before the 1986 Amendments to the Safe Drinking Water Act.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above

12. Lead and copper are regulated in a _____ which requires systems to take tap water samples at sites with lead pipes or copper pipes that have lead solder and/or are served by lead service lines.

- A. MCLGs
- B. MCL
- C. Dental fluorosis
- D. Treatment Technique
- E. None of the Above

13. The _____, which triggers water systems into taking treatment steps if exceeded in more than 10% of tap water samples, for copper is 1.3 mg/L, and for lead is 0.015mg/L.

- A. MCLGs
- B. MCL
- C. Dental fluorosis
- D. Action level
- E. None of the Above

14. Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when _____ are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)

- A. Acrylamide
- B. Epichlorohydrin
- C. All of the Above
- D. None of the Above

15. Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: _____ = 0.01% dosed at 20 mg/L (or equivalent)

- A. Acrylamide
- B. Epichlorohydrin
- C. All of the Above

16. The presence of these bacteria in drinking water are usually a result of a problem with the treatment system or the pipes which distribute water, and indicates that the water may be contaminated with germs that can cause disease.

- A. Trichloroethylene
- B. Microbes
- C. Contaminants
- D. Coliform bacteria
- E. None of the Above

17. Fecal Coliform and E coli are bacteria whose presence indicates that the water may be contaminated with _____.

- A. Trichloroethylene
- B. Microbes
- C. Contaminants
- D. Human or animal wastes
- E. None of the Above

18. _____ in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms.
- A. Trichloroethylene
 - B. Microbes
 - C. Contaminants
 - D. Coliform bacteria
 - E. None of the Above
19. _____ is a parasite that enters lakes and rivers through sewage and animal waste.
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above
20. Cryptosporidium causes _____, a mild gastrointestinal disease.
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above
21. _____ disease can be severe or fatal for people with severely weakened immune systems.
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above
22. The EPA and CDC have prepared advice for those with severely compromised immune systems who are concerned about _____.
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above
23. _____ is a parasite that enters lakes and rivers through sewage and animal waste.
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above
24. _____ causes gastrointestinal illness (e.g. diarrhea, vomiting, and cramps).
- A. Cryptosporidium
 - B. Cryptosporidiosis
 - C. Giardia lamblia
 - D. Gastrointestinal illness
 - E. None of the Above

25. _____ are a broad group of bacteria including nonpathogens, pathogens, and opportunistic pathogens; they may be an indicator of poor general biological quality of drinking water. Often referred to as HPC.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. HPC
 - E. None of the Above
26. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the EPA standards over many years may have an increased risk of getting cancer.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. Combined Radium 226/228
 - E. None of the Above
27. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the EPA standards over many years may have an increased risk of getting cancer.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. Combined Radium 226/228
 - E. None of the Above
28. Some people who drink water containing radium 226 or 228 in excess of the EPA standards over many years may have an increased risk of getting cancer.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. Combined Radium 226/228
 - E. None of the Above
29. _____ can dissolve and accumulate in underground water sources, such as wells, and in the air in your home. Breathing radon can cause lung cancer. Drinking water containing radon presents a risk of developing cancer. Radon in air is more dangerous than radon in water.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. Radon gas
 - E. None of the Above
30. Chlorine _____ with hydrogen sulfide and water to form hydrochloric acid, and it reacts with carbon monoxide and sulfur dioxide to form phosgene and sulfuryl chloride.
- A. Combustible materials
 - B. Attack
 - C. Incompatible
 - D. Reacts
 - E. None of the Above

31. Solvents used as degreasers or cleaning agents. Improper disposal of _____ can lead to contamination of natural waters.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
32. _____ tend to evaporate very easily. This characteristic gives _____ very distinct chemical odors like gasoline, kerosene, lighter fluid, or dry cleaning fluid. Some _____ are suspected cancer-causing agents.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
33. _____ are organic chemical compounds that have high enough vapor pressures under normal conditions to significantly vaporize and enter the atmosphere.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
34. A wide range of carbon-based molecules, such as aldehydes, ketones, and other light hydrocarbons are _____. The term often is used in a legal or regulatory context and in such cases the precise definition is a matter of law. These definitions can be contradictory and may contain "loopholes"; e.g. exceptions, exemptions, and exclusions.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
35. The United States Environmental Protection Agency defines a _____ as any organic compound that participates in a photoreaction; others believe this definition is very broad and vague as organics that are not volatile in the sense that they vaporize under normal conditions can be considered volatile by this EPA definition. The term may refer both to well characterized organic compounds and to mixtures of variable composition.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
36. _____ is the measure of Calcium and Magnesium and other hard ions associated with carbonate (CO_3^{2-}) and bicarbonate (HCO_3^-) ions contained in a solution, usually water. It is usually expressed either as parts per million (ppm or mg/L), or in degrees (KH - from the German "Karbonathärte").
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE

37. One German degree of _____ is equivalent to about 17.8575 mg/L.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
38. Both measurements (mg/L or KH) are usually expressed "as CaCO₃" – meaning the amount of hardness expressed as if calcium carbonate was the sole source of hardness. Every bicarbonate ion only counts for half as much carbonate hardness as a carbonate ion does.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
39. If a solution contained 1 liter of water and 50 mg NaHCO₃ (baking soda), it would have a _____ of about 18 mg/L as CaCO₃. If you had a liter of water containing 50 mg of Na₂CO₃, it would have a carbonate hardness of about 29 mg/L as CaCO₃.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
40. _____ supplements non-carbonate (a.k.a "permanent") hardness where hard ions are associated with anions such as Chloride that do not precipitate out of solution when heated.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
41. _____ is removed from water through the process of softening. Softening can be achieved by adding lime in the form of Ca(OH)₂, which reacts first with CO₂ to form calcium carbonate precipitate, reacts next with multi-valent cations to remove carbonate hardness, then reacts with anions to replace the non-carbonate hardness due to multi-valent cations with non-carbonate hardness due to calcium.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
42. The process requires recarbonation through the addition of carbon-dioxide to lower the pH which is raised during the initial softening process.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE

43. _____ is a measure of the ability of a solution to neutralize acids to the equivalence point of carbonate or bicarbonate.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
44. _____ is closely related to the acid neutralizing capacity (ANC) of a solution and ANC is often incorrectly used to refer to alkalinity.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
45. The acid neutralizing capacity refers to the combination of the solution and solids present (e.g., suspended matter, or aquifer solids), and the contribution of solids can dominate the ANC (see carbonate minerals below).
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
46. The _____ is equal to the stoichiometric sum of the bases in solution. In the natural environment carbonate alkalinity tends to make up most of the total alkalinity due to the common occurrence and dissolution of carbonate rocks and presence of carbon dioxide in the atmosphere.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
47. Other common natural components that can contribute to _____ include borate, hydroxide, phosphate, silicate, nitrate, dissolved ammonia, the conjugate bases of some organic acids and sulfide. Solutions produced in a laboratory may contain a virtually limitless number of bases that contribute to alkalinity.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
48. _____ is usually given in the unit mEq/L (milliequivalent per liter). Commercially, as in the pool industry, alkalinity might also be given in the unit ppm or parts per million.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE

49. _____ is sometimes incorrectly used interchangeably with basicity. For example, the pH of a solution can be lowered by the addition of CO₂. This will reduce the basicity; however, the alkalinity will remain unchanged.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
50. _____ The products created due to the reaction of chlorine with organic materials (e.g. leaves, soil) present in raw water during the water treatment process.
- A. CARBONATE HARDNESS
 - B. VOLATILE ORGANIC COMPOUNDS
 - C. ALKALINITY
 - D. DISINFECTION BY-PRODUCTS
 - E. NONE OF THE ABOVE
51. Some people who drink water containing arsenic in excess of the EPA's standard over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
- A. Alpha emitters
 - B. Beta/photon emitters
 - C. Opportunistic pathogens
 - D. Arsenic
 - E. None of the Above
52. Many communities add _____ to their drinking water to promote dental health. Each community makes its own decision about whether or not to add fluoride.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above
53. The EPA has set an enforceable drinking water standard for _____ of 4 mg/L (some people who drink water containing fluoride in excess of this level over many years could get bone disease, including pain and tenderness of the bones).
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above
54. The EPA has also set a secondary fluoride standard of 2 mg/L to protect against _____.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above
55. _____, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. None of the Above

56. Children under nine should not drink water that has more than 2 mg/L of _____.
- A. MCLGs
 - B. MCL
 - C. Dental fluorosis
 - D. Fluoride
 - E. None of the Above
57. Where the water is chlorinated to make sure to hold a residual in the distribution system.
- A. Polymer
 - B. Pre Chlorine
 - C. Prechlorination
 - D. Post Chlorine
 - E. None of the Above
58. A pH of 7 is considered to be _____. Most natural water has a pH between 6.0 and 8.5.
- A. Base
 - B. Alkaline
 - C. Raise
 - D. Neutral
 - E. None of the Above
59. The addition of chlorine before the filtration process will help control algae and slime growth
- A. Post Chlorine
 - B. Polymer
 - C. Prechlorination
 - D. None of the Above
60. Solids that have been removed from the raw water by the coagulation and settling processes.
- A. Zinc Orthophosphate
 - B. Settled Solids
 - C. Corrosion Control
 - D. Taste and Odor Control
 - E. None of the Above
61. Caustic NaOH (also called Sodium Hydroxide) is a strong chemical used in the treatment process to neutralize acidity, increase alkalinity or _____ the pH value.
- A. Neutral
 - B. Raise
 - C. Alkaline
 - D. None of the Above
62. Where the raw water is dosed with a large concentration of chlorine.
- A. Pre Chlorine
 - B. Polymer
 - C. Chlorine
 - D. Prechlorination
 - E. None of the Above
63. The turbidity of the water coming to the treatment plant from the raw water source.
- A. Zinc Orthophosphate
 - B. Settled Solids
 - C. Corrosion Control
 - D. Taste and Odor Control
 - E. None of the Above

64. As with _____, it is important to remember that activities many miles away from you may affect the quality of ground water.
- A. Well
 - B. Surface water
 - C. Community
 - D. Reservoirs
 - E. Aquifers
65. Your annual drinking _____ will tell you where your water supplier gets your water.
- A. Contaminants
 - B. Contaminated
 - C. Dissolved minerals
 - D. Discharge
 - E. None of the Above
66. Your water will normally contain chlorine and varying amounts of _____ including calcium, magnesium, sodium, chlorides, sulfates and bicarbonates, depending on its source.
- A. Contaminants
 - B. Contaminated
 - C. Dissolved minerals
 - D. Discharge
 - E. None of the Above
67. It is also not uncommon to find traces of iron, manganese, copper, aluminum, nitrates, _____ and herbicides.
- A. Contaminants
 - B. Contaminated
 - C. Dissolved minerals
 - D. Insecticides
 - E. None of the Above
68. Although the maximum amounts of all these substances as mentioned above, are strictly limited by the regulations. These are usually referred to as _____.
- A. Contaminants
 - B. Contaminated
 - C. Dissolved minerals
 - D. Discharge
 - E. None of the Above
69. Surface water is usually _____ and unsafe to drink.
- A. Contaminants
 - B. Contaminated
 - C. Dissolved minerals
 - D. Discharge
 - E. None of the Above
70. The Phase I Rule became effective on January 9, 1989. This rule, also called the Volatile Organic Chemical Rule, or VOC Rule, set water quality standards for 8 VOCs and required all community and Non-Transient, Non-Community water systems to monitor for and, if necessary, treat their supplies for these chemicals.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above

71. The 8 VOCs regulated under this rule are: Benzene, Carbon Tetrachloride, para-dichlorobenzene, trichloroethylene, vinyl chloride, 1,1, 2-trichloroethane, 1,1-dichloroethylene, and 1,2-dichloroethane.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above
72. A unit of measure used to describe the turbidity of water.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above
73. Turbidity is the cloudiness in water.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above
74. Inorganic compounds that can enter water supplies from fertilizer runoff and sanitary wastewater discharges.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above
75. _____ in drinking water are associated with methemoglobinemia, or blue baby syndrome, which results from interferences in the blood's ability to carry oxygen.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Nephelometric Turbidity Units
 - E. None of the Above
76. Elements that undergo a process of natural decay. As radionuclides decay, they emit radiation in the form of alpha or beta particles and gamma photons.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Radionuclides
 - E. None of the Above
77. Radiation can cause adverse health effects, such as cancer, so limits are placed on radionuclide concentrations in drinking water.
- A. Nitrates
 - B. Phase I Contaminants
 - C. Organics
 - D. Radionuclides
 - E. None of the Above

78. _____ was first passed in 1974 and established the basic requirements under which the nation's public water supplies were regulated.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

79. The _____ is responsible for setting the national drinking water regulations while individual states are responsible for ensuring that public water systems under their jurisdiction are complying with the regulations.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

80. The _____ was amended in 1986 and again in 1996.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

81. The potential for harm to people exposed to chemicals. In order for there to be risk, there must be hazard and there must be exposure.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

82. Bacteria that are used as indicators of _____ in drinking water.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

83. The property of a chemical to harm people who come into contact with it.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

84. States must inventory sources of contamination to the extent they have the technology and resources to _____ delineated as described in the guidance.

- A. Risk
- B. SDWA
- C. Toxicity
- D. To the Extent Practical
- E. None of the Above

85. All information sources may be used, _____ Federal and state inventories of sources.
- A. Risk
 - B. SDWA
 - C. Toxicity
 - D. To the Extent Practical
 - E. None of the Above
86. The surface and subsurface area surrounding a well or well field, supplying a PWS, through which contaminants are reasonably likely to move toward and reach such water well or well field.
- A. Transient non-community systems
 - B. Transient/Non-Transient, Non-Community Water Systems
 - C. Treatment Technique
 - D. Wellhead Protection Area
 - E. None of the Above
87. Water systems that are non-community systems: transient systems serve 25 non-resident persons per day for 6 months or less per year.
- A. Transient non-community systems
 - B. Transient/Non-Transient, Non-Community Water Systems
 - C. Treatment Technique
 - D. Wellhead Protection Area
 - E. None of the Above
88. _____ typically are restaurants, hotels, large stores, etc. Non-transient systems regularly serve at least 25 of the same non-resident persons per day for more than 6 months per year. These systems typically are schools, offices, churches, factories, etc.
- A. Transient non-community systems
 - B. Transient/Non-Transient, Non-Community Water Systems
 - C. Treatment Technique
 - D. Wellhead Protection Area
 - E. None of the Above
89. A specific treatment method required by the EPA to be used to control the level of a contaminant in drinking water. In specific cases where the EPA has determined it is not technically or economically feasible to establish an MCL, the EPA can instead specify a treatment technique.
- A. Transient non-community systems
 - B. Transient/Non-Transient, Non-Community Water Systems
 - C. Treatment Technique
 - D. Wellhead Protection Area
 - E. None of the Above
90. A treatment technique is an enforceable procedure or level of _____ which public water systems must follow to ensure control of a contaminant.
- A. Transient non-community systems
 - B. Transient/Non-Transient, Non-Community Water Systems
 - C. Treatment Technique
 - D. Wellhead Protection Area
 - E. None of the Above
91. A topographic boundary area that is the perimeter of the catchment area of a stream.
- A. Watershed Approach
 - B. Watershed Area
 - C. Watershed
 - D. None of the Above

92. A watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically-defined geographic areas, taking into consideration both ground and surface water flow.

- A. Watershed Approach
- B. Watershed Area
- C. Watershed
- D. None of the Above

93. A topographic area that is within a line drawn connecting the highest points uphill of a drinking water intake, from which overland flow drains to the intake.

- A. Watershed Approach
- B. Watershed Area
- C. Watershed
- D. None of the Above

94. _____ growth is supplied by the energy of the sun, as algae absorb this energy it converts carbon dioxide to oxygen. This creates aerobic conditions that supply fish with oxygen.

- A. pH
- B. Algae
- C. THM
- D. PAC or GAC
- E. None of the Above

95. Without sun light, the _____ would consume oxygen and release carbon dioxide.

- A. pH
- B. Algae
- C. THM
- D. PAC or GAC
- E. None of the Above

96. The lack of _____ in water is known as anaerobic conditions.

- A. pH
- B. Algae
- C. THM
- D. PAC or GAC
- E. None of the Above

97. Certain vegetation removes the excess nutrients that would promote the growth of _____.

- A. pH
- B. Algae
- C. THM
- D. PAC or GAC
- E. None of the Above

98. Too much algae will imbalance the lake and this will result in _____.

- A. pH
- B. Algae
- C. THM
- D. PAC or GAC
- E. None of the Above

99. Most treatment plant upsets such as taste and odor, color, and filter clogging is due to _____.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
100. The type of _____ determines the problem it will cause for instance slime, corrosion, color, and toxicity.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
101. Algae can be controlled by using chemicals such as _____.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
102. Depending on federal regulations and the amount of copper found natural in water, operators have used Potassium Permanganate, _____ and Chlorine.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
103. The _____ and alkalinity of the water will determine how these chemicals will react. Most systems no longer use Chlorine because it reacts with the organics in the water to form Trihalomethanes.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
104. _____ form when disinfectants added to drinking water to kill germs react with naturally-occurring organic matter in water.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above
105. Some people who drink water containing _____ in excess of EPA's standard over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
- A. pH
 - B. Algae
 - C. THM
 - D. PAC or GAC
 - E. None of the Above

106. Most lakes and reservoirs are not free of logs, tree limbs, sticks, gravel, sand and rocks, weeds, leaves, and trash. If not removed, these will cause problems to the treatment plant's _____.

- A. Mechanical bar screens
- B. Screening
- C. Horizontal bars
- D. Clarifiers
- E. None of the Above

107. The best way to protect the plant is _____.

- A. Mechanical bar screens
- B. Screening
- C. Horizontal bars
- D. Clarifiers
- E. None of the Above

108. Bar screens are made of straight steel bars at the intake of the plant. The spacing of the _____ will rank the size.

- A. Mechanical bar screens
- B. Screening
- C. Horizontal bars
- D. Clarifiers
- E. None of the Above

109. _____ are woven stainless steel material and the opening of the fabric is narrow. Both require manual cleaning.

- A. Mechanical bar screens
- B. Screening
- C. Horizontal bars
- D. Clarifiers
- E. None of the Above

110. _____ vary in size and use some type of raking mechanism that travels horizontally down the bars to scrap the debris off.

- A. Mechanical bar screens
- B. Screening
- C. Horizontal bars
- D. Clarifiers
- E. None of the Above

111. Improving the clarity of surface water has always presented a challenge because source quality varies. Traditional treatments rely on _____ with lengthy times.

- A. Graded silica sand filter media
- B. On expensive, construction-intensive processes
- C. Which causes them to repel
- D. Conventional water treatment process
- E. None of the Above

112. Suspended particles carry an electrical charge _____ one another.

- A. Graded silica sand filter media
- B. On expensive, construction-intensive processes
- C. Which causes them to repel
- D. Conventional water treatment process
- E. None of the Above

113. The _____ uses alum (aluminum sulfate) and cationic polymer to neutralize the charge. That allows suspended particles to clump together to form more easily filtered particles.

- A. Graded silica sand filter media
- B. On expensive, construction-intensive processes
- C. Which causes them to repel
- D. Conventional water treatment process
- E. None of the Above

114. Alum combines with alkalinity in the raw water to _____ neutralizes suspended particles' electrical charge and forms a base for coagulating those particles.

- A. Graded silica sand filter media
- B. On expensive, construction-intensive processes
- C. Which causes them to repel
- D. Form a white precipitate that
- E. None of the Above

115. Since the sand _____ all have about the same density, larger grains lay toward the bottom of the filter bed and finer grains lay at the top of the filter bed.

- A. Material
- B. Particles
- C. Density
- D. Grains
- E. None of the Above

116. Filtration occurs only within the first few inches of the finer _____ at the top of the bed.

- A. Material
- B. Particles
- C. Density
- D. Grains
- E. None of the Above

117. A depth filter has four layers of filtration _____, each of different size and density.

- A. Material
- B. Particles
- C. Density
- D. Media
- E. None of the Above

118. Light, coarse _____ lies at the top of the filter bed.

- A. Material
- B. Particles
- C. Density
- D. Grains
- E. None of the Above

119. The _____ become progressively finer and denser in the lower layers. Larger suspended particles are removed by the upper layers while smaller particles are removed in the lower layers.

- A. Material
- B. Particles
- C. Density
- D. Media
- E. None of the Above

120. _____ are trapped throughout the bed, not in just the top few inches. That allows a depth filter to run substantially longer and use less backwash water than a traditional sand filter.

- A. Material
- B. Particles
- C. Density
- D. Grains
- E. None of the Above

121. Turbidity washes out of the filter bed as the filter media particles _____ one another. The down flow rinse settles the bed before the filter returns to service.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Backwash
- E. None of the Above

122. _____ lasts about 5 to 10 minutes.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Fast rinse
- E. None of the Above

123. As suspended _____ accumulate in a filter bed, the pressure drop through the filter increases.

- A. Material
- B. Particles
- C. Density
- D. Grains
- E. None of the Above

124. When the pressure difference between filter inlet and outlet increases by 5 - 10 psi from the beginning of the _____, the filter should be reconditioned.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Backwash
- E. None of the Above

125. Operating beyond this pressure drop increases the chance of fouling - called " _____ " - within the filter.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Backwash
- E. None of the Above

126. The reconditioning cycle consists of an up flow _____ followed by a down flow rinse.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Backwash
- E. None of the Above

127. _____ is an up flow operation, at about 14 gpm per square foot (34m/hr) of filter bed area that lasts about 10 minutes.

- A. Scour
- B. Cycle
- C. Mud-balling
- D. Backwash
- E. None of the Above

128. Chemical pretreatment is often used to enhance filter performance, particularly when turbidity includes fine _____.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

129. Suspended particles are usually _____.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

130. _____ such as alum (aluminum sulfate), ferric chloride, or a cationic polymer neutralizes the charge, allowing the particles to cling to one another and to the filter media.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

131. Representing a slight modification of _____, package plants are usually built in a factory, mounted on skids, and transported virtually assembled to the operation site.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

132. These are appropriate for small community systems where _____ is desired, but without the construction costs and space requirements associated with separately constructed sedimentation basins, filter beds, clear wells, etc.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

133. Chemical pretreatment may increase filtered water clarity, measured in _____, by 90% compared with filtration alone.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

134. If an operator is present to make adjustments for variations in the raw water, filtered water _____ in the range of 93 to 95% are achievable.

- A. Colloidal particles
- B. NTU
- C. Electrically charged
- D. Full water treatment
- E. None of the Above

135. In addition to the _____ filtration processes, package plants are found as two types: tube-type clarifiers and adsorption clarifiers. This is the most prevalent form of water treatment technology in use today.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

136. This filtration process employs a combination of _____ and chemical processes in order to achieve maximum effectiveness.

- A. Particles
- B. Alum
- C. Physical
- D. Coagulation
- E. None of the Above

137. At the Water Treatment Plant, aluminum sulfate, commonly called _____, is added to the water in the "flash mix" to cause microscopic impurities in the water to clump together.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

138. The _____ and the water are mixed rapidly by the flash mixer. The resulting larger particles will be removed by filtration.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

139. _____ is the process of joining together particles in water to help remove organic matter.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

140. When solid matter is too small to be removed by a depth filter, the fine particles must be coagulated, or "stuck together" to form larger particles which can be filtered. This is achieved through the use of _____ chemicals.

- A. Particles
- B. Alum
- C. Coagulant
- D. None of the Above

141. Coagulant chemicals are required since colloidal particles by themselves have the tendency to stay suspended in water and not settle out. This is primarily due to a negative charge on the surface of the _____.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

142. All matter has a residual surface charge to a certain degree. But since colloidal particles are so small, their charge per volume is significant. Therefore, the like charges on the _____ repel each other, and they stay suspended in water.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulation
- E. None of the Above

143. _____ chemicals such as "alum" (aluminum sulfate) work by neutralizing the negative charge, which allows the particles to come together. Other coagulants are called "cationic polymers", which can be thought of as positively charged strings that attract the particles to them, and in the process, form a larger particle.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulant
- E. None of the Above

144. New chemicals have been developed which combine the properties of alum-type coagulants and cationic polymers. Which chemical is used depends on the _____, and will usually be chosen by the engineer designing the water treatment system.

- A. Particles
- B. Alum
- C. Application
- D. Coagulation
- E. None of the Above

145. Aluminum Sulfate is the most widely used _____ in water treatment.

- A. Particles
- B. Alum
- C. Conventional
- D. Coagulant
- E. None of the Above

146. _____ is necessary to meet the current regulations for almost all potable water plants using surface water.

- A. Particles
- B. Aluminum Sulfate
- C. Conventional
- D. Coagulation
- E. None of the Above

147. _____ is also excellent for removing nutrients such as phosphorous in wastewater treatment. Liquid Aluminum Sulfate is a 48.86% solution.

- A. Particles
- B. Aluminum Sulfate
- C. Conventional
- D. Coagulation
- E. None of the Above

148. Large microorganisms, including algae and amoebic cysts, are readily removed by _____ and filtration. Bacterial removals of 99% are also achievable.

- A. Gravity
- B. Floc
- C. Detention times
- D. Coagulation
- E. None of the Above

149. More than 98% of poliovirus type 1 was removed by conventional _____ and filtration.

- A. Gravity
- B. Floc
- C. Detention times
- D. Coagulation
- E. None of the Above

150. Several recent studies have shown that bacteria and viral agents are attached to organic and inorganic particulates. Hence, removal of these particulates by conventional _____ and filtration is a major component of effective treatment for the removal of pathogens.

- A. Gravity
- B. Floc
- C. Detention times
- D. Coagulation
- E. None of the Above

151. The process of bringing together _____ or coagulated particles to form larger masses which can be settled and/or filtered out of the water being treated.

- A. Gravity
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

152. In this process, which follows the rapid mixing, the chemically treated water is sent into a basin where the suspended particles can collide, agglomerate (stick together), and form heavier particles called _____.

- A. Gravity
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

153. Gentle agitation of the water and appropriate _____ (the length of time water remains in the basin) help facilitate this process.

- A. Gravity
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

154. The water is slowly mixed in _____ allowing the coagulated particles, now called "floc," to become larger and stronger.

- A. Gravity
- B. Floc
- C. Contact chambers
- D. Destabilized
- E. None of the Above

155. As floc particles mix in the water, bacteria and other microorganisms are caught in the floc _____.

- A. Structure
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

156. Depending on the quality of the _____, some plants have pre-sedimentation.

- A. Gravity
- B. Floc
- C. Source Water
- D. Destabilized
- E. None of the Above

157. Pre-sedimentation allows larger particles time to _____ in a reservoir or lake (sand, heavy silt) reducing solid removal loads.

- A. Gravity
- B. Floc
- C. Settle
- D. Destabilized
- E. None of the Above

158. Pre-sedimentation provides an _____ which evens out fluctuations in concentrations of suspended solids.

- A. Gravity
- B. Floc
- C. Equalization basin
- D. Destabilized
- E. None of the Above

159. Following flocculation, a sedimentation step may be used. During sedimentation, the velocity of the water is decreased so that the suspended material, including flocculated particles, can settle out by _____.

- A. Gravity
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

160. Once settled, the _____ combine to form a sludge that is later removed from the bottom of the basin.

- A. Particles
- B. Floc
- C. Detention times
- D. Destabilized
- E. None of the Above

161. A water treatment step used to remove turbidity, _____, odor, taste and color.
- A. Gravity
 - B. Floc
 - C. Dissolved organics
 - D. Destabilized
 - E. None of the Above
162. The water flows by gravity through large filters of anthracite coal, silica sand, garnet and _____.
- A. Gravel
 - B. Floc
 - C. Detention times
 - D. Destabilized
 - E. None of the Above
163. The floc particles are _____ in these filters. The rate of filtration can be adjusted to meet water consumption needs.
- A. Remove, Removal or Removed
 - B. Flushed
 - C. Disposable
 - D. Settled out
 - E. None of the Above
164. Filters for suspended particle _____ can also be made of graded sand, granular synthetic material, screens of various materials, and fabrics.
- A. Remove, Removal or Removed
 - B. Flushed
 - C. Disposable
 - D. Settled out
 - E. None of the Above
165. The most widely used are rapid-sand filters in tanks. In these units, gravity holds the material in place and the flow is downwards. The filter is periodically cleaned by a reversal of flow and the discharge of back _____ water into a drain.
- A. Remove, Removal or Removed
 - B. Flushed
 - C. Disposable
 - D. Settled out
 - E. None of the Above
166. Cartridge filters made of fabric, paper, or plastic material are also common and are often much smaller and cheaper, as well as _____.
- A. Remove, Removal or Removed
 - B. Flushed
 - C. Disposable
 - D. Settled out
 - E. None of the Above
167. Filters are available in several ratings, depending on the size of particles to be _____.
- A. Remove, Removal or Removed
 - B. Flushed
 - C. Disposable
 - D. Settled out
 - E. None of the Above

168. Activated carbon filters, described earlier, will also _____ turbidity, but would not be recommended for that purpose only.

- A. Remove, Removal or Removed
- B. Flushed
- C. Disposable
- D. Settled out
- E. None of the Above

169. With most of the larger particles _____, the water now goes to the filtration process. At a rate of between 2 and 10 gpm per square foot, the water is filtered through an approximate 36" bed of graded sand.

- A. Remove, Removal or Removed
- B. Flushed
- C. Disposable
- D. Settled out
- E. None of the Above

170. Anthracite coal or activated carbon may also be included in the sand to improve the filtration process, especially for the _____ of organic contaminants, taste, and odor problems.

- A. Remove, Removal or Removed
- B. Flushed
- C. Disposable
- D. Settled out
- E. None of the Above

171. _____ of overall filtration process performance should be conducted on a routine basis, at least once per day.

- A. Remove, Removal or Removed
- B. Evaluation
- C. Disposable
- D. Settled out
- E. None of the Above

172. Poor chemical treatment can often result in either early turbidity breakthrough or rapid head loss buildup. The more uniform the media, the _____ head loss buildup.

- A. Remove, Removal or Removed
- B. Evaluation
- C. Disposable
- D. Slower
- E. None of the Above

173. All water treatment plants that use surface water are _____ by the U.S. EPA's Surface Water Treatment Rules or SWTR.

- A. Remove, Removal or Removed
- B. Evaluation
- C. Governed
- D. Settled out
- E. None of the Above

174. Direct Filtration Plant vs. Conventional Plant The only difference is that the sedimentation process or step is omitted from the _____ plant.

- A. Detention Time
- B. Direct Filtration
- C. Declining Rate Filters
- D. Disinfection
- E. None of the Above

175. The flow rate will vary with head loss. Each filter operates at the same rate, but can have a variable water level.

- A. Detention Time
- B. Direct Filtration plant
- C. Declining Rate Filters
- D. Disinfection
- E. None of the Above

176. This system requires an effluent control structure (weir) to provide adequate media submergence.

- A. Detention Time
- B. Direct Filtration plant
- C. Declining Rate Filters
- D. Disinfection
- E. None of the Above

177. The actual time required for a small amount of water to pass through a sedimentation basin at a given rate of flow, or the calculated time required for a small amount of liquid to pass through a tank at a given rate of flow.

- A. Detention Time
- B. Direct Filtration plant
- C. Declining Rate Filters
- D. Disinfection
- E. None of the Above

178. Chlorine is added to the water at the flash mix for pre-disinfection. The chlorine kills or inactivates harmful microorganisms. Chlorine is added again after filtration for post-disinfection.

- A. Detention Time
- B. Direct Filtration plant
- C. Declining Rate Filters
- D. Disinfection
- E. None of the Above

179. _____ traditionally has been done on a routine basis in most water treatment plants to control the coagulant dose.

- A. Detention Time
- B. Direct Filtration plant
- C. Declining Rate Filters
- D. Jar testing
- E. None of the Above

180. Conventional method of jar testing. It is the quickest and most economical way to obtain good reliable data on the many variables which affect the treatment process. These include: Determination of most _____ coagulant.

- A. Sequence
- B. Effective
- C. Optimum
- D. Application
- E. None of the Above

181. Determination of _____ coagulation pH for the various coagulants.

- A. Sequence
- B. Effective
- C. Optimum
- D. Application
- E. None of the Above

182. Optimum point of _____ of polymers in the treatment train.
- A. Sequence
 - B. Effective
 - C. Optimum
 - D. Application
 - E. None of the Above
183. Optimum sequence of _____ of coagulants, polymers and pH adjustment chemicals.
- A. Sequence
 - B. Effective
 - C. Optimum
 - D. Application
 - E. None of the Above
184. pH _____ of a basic or acid condition of a liquid.
- A. Sequence
 - B. Effective
 - C. Optimum
 - D. Expression
 - E. None of the Above
185. The pH range is from 0-14, zero being the most acid and 14 being the most _____.
- A. Neutral
 - B. Alkaline
 - C. Raise
 - D. None of the Above
186. A type of chemical when combined with other types of coagulants aid in binding small suspended particles to larger particles to help in the settling and filtering processes.
- A. Post Chlorine
 - B. Polymer
 - C. Pre Chlorine
 - D. Prechlorination
 - E. None of the Above
187. A chemical used to coat the pipes in the distribution system to inhibit corrosion.
- A. Zinc Orthophosphate
 - B. Settled Solids
 - C. Corrosion Control
 - D. Taste and Odor Control
 - E. None of the Above
188. Powdered activated carbon (PAC) is occasionally added for taste and odor control. PAC is added to the flash mix.
- A. Zinc Orthophosphate
 - B. Settled Solids
 - C. Corrosion Control
 - D. Taste and Odor Control
 - E. None of the Above

189. The rule specifies maximum contaminant level goals for Giardia lamblia, viruses and Legionella, and promulgated filtration and disinfection requirements for public water systems using surface water sources or by ground water sources under the direct influence of surface water. The regulations also specify water quality, treatment, and watershed protection criteria under which filtration may be avoided.

- A. Susceptibility Analysis
- B. State Management Plan (SMP) Program
- C. Significant Potential Source of Contamination
- D. Surface Water Treatment Rule (SWTR)
- E. None of the Above

190. A clean, constant supply of drinking water is essential to every community. People in large cities frequently drink water that comes from surface water sources, such as lakes, rivers, and _____.

- A. Well
- B. Watershed
- C. Community
- D. Reservoirs
- E. None of the Above

191. Sometimes these sources are close to the _____. Other times, drinking water suppliers get their water from sources many miles away.

- A. Well
- B. Watershed
- C. Community
- D. Reservoirs
- E. None of the Above

192. In either case, when you think about where your drinking water comes from, it's important to consider not just the part of the river or lake that you can see, but the entire _____.

- A. Well
- B. Watershed
- C. Community
- D. Reservoirs
- E. None of the Above

193. The _____ is the land area over which water flows into the river, lake, or reservoir.

- A. Well
- B. Watershed
- C. Community
- D. Reservoirs
- E. None of the Above

194. In rural areas, people are more likely to drink ground water that was pumped from a _____.

- A. Well
- B. Watershed
- C. Community
- D. Reservoirs
- E. None of the Above

195. These wells tap into _____--the natural reservoirs under the earth's surface--that may be only a few miles wide, or may span the borders of many states.

- A. Well
- B. Watershed
- C. Community
- D. Aquifers
- E. None of the Above

196. Water testing is conducted throughout the treatment process. Items like turbidity, pH and chlorine residual are monitored and recorded continuously. Some items are _____ several times per day, some once per quarter and others once per year.

- A. Allowing
- B. Tested
- C. Plunging
- D. Improve
- E. None of the Above

197. Collect the water sample at least 6 inches under the surface by _____ the container mouth down into the water and turning the mouth towards the current by dragging the container slowly horizontal.

- A. Allowing
- B. Tested
- C. Plunging
- D. Improve
- E. None of the Above

198. Care should be taken not to disturb the bottom of the water source or along the sides so as not to _____ any settled solids. This would create erroneous errors.

- A. Allowing
- B. Tested
- C. Plunging
- D. Improve
- E. None of the Above

199. Chemicals are added to the water in order to _____ the subsequent treatment processes.

- A. Allowing
- B. Tested
- C. Plunging
- D. Improve
- E. None of the Above

200. Chemicals may _____ pH adjusters and coagulants.

- A. Allowing
- B. Tested
- C. Plunging
- D. Improve
- E. None of the Above

201. Coagulants are chemicals, such as alum, that neutralize positive or negative charges on small particles, _____ them to stick together and form larger particles that are more easily removed by sedimentation (settling) or filtration.

- A. Allowing
- B. Tested
- C. Plunging
- D. None of the Above

202. Hydrofluosilicic Acid (H_2SiF_6) a clear, fuming corrosive liquid with a pH ranging from 1 to 1.5. Used in water treatment to _____.

- A. Zinc Orthophosphate
- B. Settled Solids
- C. Corrosion Control
- D. Taste and Odor Control
- E. None of the Above

203. The pH of the water is adjusted with sodium carbonate, commonly called soda ash. Soda ash is fed into the water after filtration.

- A. Zinc Orthophosphate
- B. Settled Solids
- C. Corrosion Control
- D. Taste and Odor Control
- E. None of the Above

204. A variety of devices, such as baffles, static mixers, impellers, and in-line sprays can be used to mix the water and _____ evenly.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Conventional process
- E. None of the Above

Chlorine can be added as sodium hypochlorite, calcium hypochlorite or chlorine gas. When any of these is added to water, chemical reactions occur as these equations show:

205. $Cl_2 + H_2O \rightarrow HOCl + \underline{\hspace{2cm}}$
(chlorine gas) (water) (hypochlorous acid) (hydrochloric acid)

- A. HCl
- B. $Ca(OH)_2$
- C. HOCl
- D. OCl^-
- E. None of the Above

206. $CaOCl_2 + H_2O \rightarrow \underline{\hspace{2cm}} + Ca(OH)_2$
(calcium hypochlorite) (water) (hypochlorous acid) (calcium hydroxide)

- A. HCl
- B. $Ca(OH)_2$
- C. $2HOCl$
- D. OCl^-
- E. None of the Above

207. $NaOCl + H_2O \rightarrow \underline{\hspace{2cm}} + Na(OH)$
(sodium hypochlorite) (water) (hypochlorous acid) (sodium hydroxide)

- A. HCl
- B. $Ca(OH)_2$
- C. HOCl
- D. OCl^-
- E. None of the Above

208. All three forms of chlorine produce _____ when added to water. Hypochlorous acid is a weak acid but a strong disinfecting agent. The amount of hypochlorous acid depends on the pH and temperature of the water. Under normal water conditions, hypochlorous acid will also chemically react and break down into a hypochlorite ion.

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

209. _____: HOCl H⁺ + OCl⁻ Also expressed HOCl → H⁺ + OCl⁻
(hypochlorous acid) (hydrogen) (hypochlorite ion)

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

210. The _____ is a much weaker disinfecting agent than hypochlorous acid, about 100 times less effective.

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

211. Let's now look at how pH and temperature affect the ratio of hypochlorous acid to hypochlorite ions. As the temperature is decreased, the ratio of _____ increases.

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

212. Temperature plays a small part in the acid ratio. Although the ratio of _____ is greater at lower temperatures, pathogenic organisms are actually harder to kill.

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

213. All other things being equal, higher water temperatures and _____ are more conducive to chlorine disinfection.

- A. HCl
- B. Ca(OH)
- C. HOCl
- D. OCl⁻
- E. None of the Above

214. A number of cities use _____ to disinfect their source water and to reduce THM formation.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. None of the Above

215. Although _____ is a highly effective disinfectant, it breaks down quickly, so that small amounts of chlorine or other disinfectants must be added to the water to ensure continued disinfection as the water is piped to the consumer's tap.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

216. Modifying water treatment facilities to use _____ can be expensive, and ozone treatment can create other undesirable by-products that may be harmful to health if they are not controlled (e.g., bromate).

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

217. Examples of other disinfectants include _____ and chlorine dioxide.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

218. _____ are weaker disinfectants than chlorine, especially against viruses and protozoa; however, they are very persistent and, as such, can be useful for preventing re-growth of microbial pathogens in drinking water distribution systems.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

219. Chlorine dioxide can be an effective disinfectant, but it forms _____, compounds whose toxicity has not yet been fully determined.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

220. Assessments of the health risks from these and other _____ disinfectants and chlorination by-products are currently under way.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

221. In general, the preferred method of controlling chlorination by-products is removal of the naturally occurring _____ from the source water so it cannot react with the chlorine to form by-products.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

222. THM levels may also be reduced through the replacement of chlorine with alternative disinfectants. A third option is removal of the _____ by adsorption on activated carbon beds.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

223. It is extremely important that water treatment plants ensure that methods used to control chlorination by-products do not compromise the effectiveness of _____.

- A. Chlorate and chlorite
- B. Ozone
- C. THMs
- D. Chloramines
- E. None of the Above

Alternate Disinfectants

224. _____ is a very weak disinfectant for Giardia and virus reduction.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

225. It is recommended that it be used in conjunction with a stronger disinfectant. It is best utilized as a stable distribution system disinfectant.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

226. In the production of _____, the ammonia residuals in the finished water, when fed in excess of the stoichiometric amount needed, should be limited to inhibit growth of nitrifying bacteria.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

227. _____ may be used for either taste or odor control or as a pre-disinfectant. Total residual oxidants (including chlorine dioxide and chlorite, but excluding chlorate) shall not exceed 0.30 mg/L during normal operation or 0.50 mg/L (including chlorine dioxide, chlorite and chlorate) during periods of extreme variations in the raw water supply.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

228. Ozone does not provide a system residual and should be used as a primary disinfectant only in conjunction with _____.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

229. Ozone does not produce chlorinated byproducts (such as trihalomethanes) but it may cause an increase in such byproduct formation if it is fed ahead of free chlorine; ozone may also produce its own oxygenated byproducts such as _____, ketones or carboxylic acids.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

230. _____ provides good Giardia and virus protection but its use is limited by the restriction on the maximum residual of 0.5 mg/L ClO₂/chlorite/chlorate allowed in finished water. This limits usable residuals of chlorine dioxide at the end of a process unit to less than 0.5 mg/L.

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

231. Where _____ is approved for use as an oxidant, the preferred method of generation is to entrain chlorine gas into a packed reaction chamber with a 25% aqueous solution of sodium chlorite (NaClO₂).

- A. Chlorine dioxide
- B. Chloramine
- C. Dry sodium chlorite
- D. Ozone
- E. None of the Above

232. This modification of the _____ contains many metal "tubes" that are placed in the sedimentation basin, or clarifier. These tubes are approximately 1 inch deep and 36 inches long, split-hexagonal shape, and installed at an angle of 60 degrees or less.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Conventional process
- E. None of the Above

233. These tubes provide for a very large surface area upon which particles may settle as the _____.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Conventional process
- E. None of the Above

234. The slope of the tubes facilitates _____ of the solids to the bottom of the basin, where they can be collected and removed.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Gravity settling
- E. None of the Above

235. The large surface settling area also means that adequate clarification can be obtained with detention times of 15 minutes or less. As with _____ treatment, this sedimentation step is followed by filtration through mixed media.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Conventional
- E. None of the Above

236. This technology uses an _____ with low-density plastic bead media, usually held in place by a screen.

- A. Distribute the chemicals
- B. Up flow clarifier
- C. Short Circuiting
- D. Conventional process
- E. None of the Above

237. This adsorption media is designed to enhance the _____ process by combining flocculation and sedimentation into one step.

- A. Distribute the chemicals
- B. Sedimentation/clarification
- C. Short Circuiting
- D. Conventional process
- E. None of the Above

238. In this step, turbidity is reduced by _____ of the coagulated and flocculated solids onto the adsorption media and onto the solids already adsorbed onto the media.

- A. Distribute the chemicals
- B. Water flows upwards
- C. Short Circuiting
- D. Adsorption
- E. None of the Above

239. Air scouring cleans _____ followed by water flushing.

- A. Mixed-media filtration
- B. Filter backwashing
- C. Temporary storage
- D. Adsorption clarifiers
- E. None of the Above

240. Cleaning of this type of clarifier is initiated more often than _____ because the clarifier removes more solids.

- A. Mixed-media filtration
- B. Filter backwashing
- C. Temporary storage
- D. Filtered water available
- E. None of the Above

241. As with the tube-settler type of package plant, the sedimentation/clarification process is followed by _____ and disinfection to complete the water treatment.

- A. Mixed-media filtration
- B. Filter backwashing
- C. Temporary storage
- D. Filtered water available
- E. None of the Above

242. The final step in the conventional filtration process, the clearwell provides _____ for the treated water.

- A. Mixed-media filtration
- B. Filter backwashing
- C. Temporary storage
- D. Filtered water available
- E. None of the Above

243. The two main purposes for this storage are to have _____ for backwashing the filter, and to provide detention time (or contact time) for the chlorine (or other disinfectant) to kill any microorganisms that may remain in the water.

- A. Mixed-media filtration
- B. Filter backwashing
- C. Temporary storage
- D. Filtered water available
- E. None of the Above

244. The pathogens must survive in the water. This _____ of the water and the length of time the pathogens are in the water.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

245. Some pathogens will survive for only a short time in water, others, such as Giardia or Cryptosporidium, _____.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

246. The pathogens in the water must enter the water system's intake and in numbers sufficient to infect people. The water is either not treated or _____ for the pathogens present. A susceptible person must drink the water that contains the pathogen.

- A. Caused by bacteria
- B. Depends on the temperature
- C. Inadequately treated
- D. None of the Above

247. Illness (disease) will occur. This _____ that must occur for the transmission of disease via drinking water.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

248. By breaking the chain at any point, the _____ will be prevented.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

249. Campylobacteriosis is the most common _____ caused by bacteria.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

250. Symptoms include abdominal pain, malaise, fever, nausea and vomiting; they usually begin three to five days _____. The illness is frequently over within two to five days and usually lasts no more than 10 days.

- A. Caused by bacteria
- B. Depends on the temperature
- C. May survive for months
- D. Inadequately treated
- E. None of the Above

Please fax or e-mail the answer key to TLC

Western Campus Fax (928) 272-0747.

Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Thank you...