Registration form

ACTIVATED SLUDGE CEU TRAINING COURSE $150.00

48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL $50.00

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

List number of hours worked on assignment must match State Requirement. _____

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_____ List hours worked must match State Requirement. _____

Please circle/check which certification you are applying the course CEU's.

Collection___ Wastewater Treatment ___ Pretreatment____ Other _____

Your certificate will be e-mailed to you in about two weeks unless you pay for the rush service.

Technical Learning College PO Box 3060, Chino Valley, AZ 86323-3060
Toll Free (866) 557-1746 Fax (928) 272-0747 e-mail info@tlch2o.com

If you have paid on the Internet, please write your Customer#_____

Please invoice me, my PO#_____

Please pay with your credit card on our website under Bookstore or Buy Now. Or call us and provide your credit card information.

We will stop mailing the certificate of completion 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.

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 fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error. It is my responsibility to 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. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

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.

You can obtain a printed version of the course manual from TLC for an additional $69.95 plus shipping charges.

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.

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.

Please provide a copy of your driver's license to confirm your identity.

Do not solely depend on TLC's Approval list for it may be outdated.

A second certificate of completion for a second State Agency $50 processing fee.

All downloads are electronically tracked and monitored for security purposes.

Some States and many employers require the final exam to be proctored.
http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf

Activated Sludge Answer Key

Name_____

Phone #_____

You are solely responsible in ensuring that this course is accepted for credit by your State. Did you check with your State agency to ensure this course is accepted for credit? No refunds.

Method of Course acceptance confirmation. Please fill this section

Website __ Telephone Call___ Email____ Spoke to_____

Did you receive the approval number, if applicable? _____
Do not solely depend on TLC's Approval list for it may be outdated.

What is the course approval number, if applicable? _____

You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.

Please select one answer. You can circle, underline, bold or X the answer.

1.	A B C D E F	16.	A B C D E F	31.	A B C D E F
2.	A B C D E F	17.	A B C D E F	32.	A B C D E F
3.	A B C D E F	18.	A B C D E F	33.	A B C D E F
4.	A B C D E F	19.	A B C D E F	34.	A B C D E F
5.	A B C D E F	20.	A B C D E F	35.	A B C D E F
6.	A B C D E F	21.	A B C D E F	36.	A B C D E F
7.	A B C D E F	22.	A B C D E F	37.	A B C D E F
8.	A B C D E F	23.	A B C D E F	38.	A B C D E F
9.	A B C D E F	24.	A B C D E F	39.	A B C D E F
10.	A B C D E F	25.	A B C D E F	40.	A B C D E F
11.	A B C D E F	26.	A B C D E F	41.	A B C D E F
12.	A B C D E F	27.	A B C D E F	42.	A B C D E F
13.	A B C D E F	28.	A B C D E F	43.	A B C D E F
14.	A B C D E F	29.	A B C D E F	44.	A B C D E F
15.	A B C D E F	30.	A B C D E F	45.	A B C D E F

46.	A B C D E F	80.	A B C D E F	114.	A B C D E F
47.	A B C D E F	81.	A B C D E F	115.	A B C D E F
48.	A B C D E F	82.	A B C D E F	116.	A B C D E F
49.	A B C D E F	83.	A B C D E F	117.	A B C D E F
50.	A B C D E F	84.	A B C D E F	118.	A B C D E F
51.	A B C D E F	85.	A B C D E F	119.	A B C D E F
52.	A B C D E F	86.	A B C D E F	120.	A B C D E F
53.	A B C D E F	87.	A B C D E F	121.	A B C D E F
54.	A B C D E F	88.	A B C D E F	122.	A B C D E F
55.	A B C D E F	89.	A B C D E F	123.	A B C D E F
56.	A B C D E F	90.	A B C D E F	124.	A B C D E F
57.	A B C D E F	91.	A B C D E F	125.	A B C D E F
58.	A B C D E F	92.	A B C D E F	126.	A B C D E F
59.	A B C D E F	93.	A B C D E F	127.	A B C D E F
60.	A B C D E F	94.	A B C D E F	128.	A B C D E F
61.	A B C D E F	95.	A B C D E F	129.	A B C D E F
62.	A B C D E F	96.	A B C D E F	130.	A B C D E F
63.	A B C D E F	97.	A B C D E F	131.	A B C D E F
64.	A B C D E F	98.	A B C D E F	132.	A B C D E F
65.	A B C D E F	99.	A B C D E F	133.	A B C D E F
66.	A B C D E F	100.	A B C D E F	134.	A B C D E F
67.	A B C D E F	101.	A B C D E F	135.	A B C D E F
68.	A B C D E F	102.	A B C D E F	136.	A B C D E F
69.	A B C D E F	103.	A B C D E F	137.	A B C D E F
70.	A B C D E F	104.	A B C D E F	138.	A B C D E F
71.	A B C D E F	105.	A B C D E F	139.	A B C D E F
72.	A B C D E F	106.	A B C D E F	140.	A B C D E F
73.	A B C D E F	107.	A B C D E F	141.	A B C D E F
74.	A B C D E F	108.	A B C D E F	142.	A B C D E F
75.	A B C D E F	109.	A B C D E F	143.	A B C D E F
76.	A B C D E F	110.	A B C D E F	144.	A B C D E F
77.	A B C D E F	111.	A B C D E F	145.	A B C D E F
78.	A B C D E F	112.	A B C D E F	146.	A B C D E F
79.	A B C D E F	113.	A B C D E F	147.	A B C D E F

148. A B C D E F
149. A B C D E F
150. A B C D E F
151. A B C D E F
152. A B C D E F
153. A B C D E F
154. A B C D E F
155. A B C D E F
156. A B C D E F
157. A B C D E F
158. A B C D E F
159. A B C D E F
160. A B C D E F
161. A B C D E F
162. A B C D E F
163. A B C D E F
164. A B C D E F
165. A B C D E F
166. A B C D E F
167. A B C D E F
168. A B C D E F
169. A B C D E F
170. A B C D E F
171. A B C D E F
172. A B C D E F
173. A B C D E F
174. A B C D E F
175. A B C D E F
176. A B C D E F
177. A B C D E F
178. A B C D E F
179. A B C D E F
180. A B C D E F
181. A B C D E F
182. A B C D E F
183. A B C D E F
184. A B C D E F
185. A B C D E F
186. A B C D E F
187. A B C D E F
188. A B C D E F
189. A B C D E F
190. A B C D E F
191. A B C D E F
192. A B C D E F
193. A B C D E F
194. A B C D E F
195. A B C D E F
196. A B C D E F
197. A B C D E F
198. A B C D E F
199. A B C D E F
200. A B C D E F

Addition certificates of Completion for a second State Agency $50 fee

This course contains general EPA's CWA federal rule requirements. Please be aware that each state implements wastewater/safety/environmental /building regulations that may be more stringent than EPA's regulations. Check with your state environmental/health agency for more information. These rules change frequently and are often difficult to interpret and follow. Be careful to be in compliance and do not follow this course for proper compliance.

Please e-mail or fax your answers and registration form to TLC.

Please mail or fax this survey along with your final exam

ACTIVATED SLUDGE CEU 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.

_____

_____

Please fax or e-mail the answer key to TLC info@tlch2o.com
Western Campus Fax (928) 272-0747.

Always call to confirm we have received your work.

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 have received your assignment and to confirm your identity.

Thank you…

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.

Activated Sludge CEU Training Course Assignment

The Assignment (Exam) is also 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 the start of this course to complete in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % is necessary to pass this course. We prefer if this exam is proctored. No intentional trick questions. If you should need any assistance, please email all concerns and the completed manual to info@tlch2o.com.

We would prefer that you utilize the enclosed answer sheet in the front, but if you are unable to do so, type out your own answer key. Please include your name and address on your manual and make copy for yourself. You can e-mail or fax your Answer Key along with the Registration Form to TLC. **(S) Means answer may be plural or singular**

Basic Wastewater Treatment Processes
Physical

1. One of the physical processes for wastewater treatment involves removal of particles that float on top of the water because they have _____.
   A. Biosolids
   B. Activated Sludge
   C. Chemicals
   D. Organic material
   E. Entrapped air
   F. None of the Above

Biological

2. Bacteria naturally found in water consume organic matter in sewage, turning it into new bacterial cells, _____, and other by-products.
   A. Oxygen
   B. Carbon dioxide
   C. Gravity
   D. Hydrogen sulfide
   E. Nitrogen
   F. None of the Above

3. In the 1920s, scientists figured out how to contain and accelerate _____ to remove organic material from wastewater.
   A. These natural biological processes
   B. Activated Sludge
   C. Chemicals
   D. Organic material
   E. Entrapped air
   F. None of the Above

4. The addition of _____ to the biological process causes masses of microorganisms to grow and rapidly metabolize organic materials.
   A. Oxygen
   B. Carbon dioxide
   C. Gravity
   D. Hydrogen sulfide
   E. Nitrogen
   F. None of the Above

5. The process of saturating sewage with air and microorganisms to break down the organic matter is called _____.
   A. Biosolids
   B. Activated Sludge
   C. Chemicals
   D. Organic material
   E. Entrapped air
   F. None of the Above

6. Wastewater treatment levels beyond secondary treatment are referred to as _____.

A. Oxygen
B. Carbon dioxide
C. Gravity
D. Advanced Treatment
E. Physical separation step
F. None of the Above

Chemical

7. Chemicals can be added to change pollutants into new forms that can be removed by physical processes.

A. True B. False

8. Alum, lime, or iron salts are _____ that can be added to wastewater to cause certain pollutants to floc or bunch together. The resulting large, heavier masses can be removed faster through physical processes.

A. Biosolids
B. Activated Sludge
C. Simple chemicals
D. Organic materials
E. Entrapped air
F. None of the Above

9. Polymers are _____ that have been developed to further improve the physical separation step in wastewater treatment.

A. Biosolids
B. Activated Sludge
C. Simple Chemicals
D. Organic materials
E. Synthetic inert chemicals
F. None of the Above

10. _____ are added to improve the settling of excess microbiological growth or biosolids in the later stages of treatment.

A. Biosolids
B. Activated Sludge
C. Chemicals
D. Organic materials
E. Polymers
F. None of the Above

Introduction to Activated Sludge

11. The activated sludge process uses air (oxygen) and aerobic microorganisms to digest organic matter in wastewater and create a biological floc that will readily settle out.

A. True B. False

12. A conventional activated sludge process includes an aeration tank, a settling tank, and in some cases a system to return activated sludge to the beginning of the process or to other locations.

A. True B. False

13. The biological flocs settle in the final clarifier, thus separating the biological sludge from the clear treated water.

A. True B. False

Essential Wastewater Treatment Terms

14. When free or dissolved oxygen is present in the aquatic environment, the condition is called aerobic.
    A. True B. False

15. Aerobic bacteria require an environment containing oxygen to live and reproduce.
    A. True B. False

16. Aerobes can use chemically combined oxygen, such as in water molecules, for respiration.
    A. True B. False

17. When free or dissolved oxygen is not present in the aquatic environment, the condition is called anaerobic.
    A. True B. False

18. Anaerobic bacteria need oxygen to thrive.
    A. True B. False

19. Saprophytic bacteria break down complex solids to volatile acids.
    A. True B. False

20. The volatile acids are broken down by bacteria known as methane fermenters to form methane, carbon dioxide, and water.
    A. True B. False

21. The addition of oxygen, removal of hydrogen, or removal of an electron to/from an element or compound in a chemical reaction is called oxidation.
    A. True B. False

22. The removal of oxygen, addition of hydrogen, or addition of electrons to/from an element or compound in a chemical reaction is called reduction.
    A. True B. False

23. Sulfur compounds, or elemental sulfur, are reduced to H_2S or sulfide ions under anaerobic conditions in wastewater.
    A. True B. False

Important Wastewater Characteristics

24. Wastewater characteristics can affect public health, the environment, and the design, cost, and _____.
    A. Treatment processes
    B. Total dissolved solids (TDS)
    C. Quality of the water
    D. The environment
    E. Effectiveness of treatment
    F. None of the Above

Organic Matter

25. _____, such as proteins, carbohydrates, or fats, can cause pollution of receiving waters.
    A. Long chained compounds
    B. Biodegradable organics
    C. Inorganic materials
    D. Wastewater-related sources
    E. Oxygen compounds
    F. None of the Above

26. Organisms use dissolved oxygen in the water to break down biodegradable materials. This process is dangerous to aquatic life because the _____ in the water is reduced or depleted.
    A. Sediment
    B. Supply of oxygen
    C. Hydrogen
    D. Graywater and blackwater
    E. Nitrogen
    F. None of the Above

27. The _____ of wastewater is the amount of oxygen that organisms need to break down the biodegradable materials in the wastewater.
    A. Biochemical oxygen demand (BOD)
    B. Biodegradable materials
    C. Organic materials
    D. Wastewater-related sources
    E. Oxygen
    F. None of the Above

28. Many _____ used by agriculture and industries cannot be quickly broken down by organisms, making treatment more difficult.
    A. Inorganic substances
    B. Organic materials
    C. Organic compounds
    D. Graywater and blackwater
    E. Synthetic organic compounds
    F. None of the Above

29. Certain synthetic organics, such as _____, are toxic to humans, fish, and aquatic plants.
    A. BOD
    B. Most inorganic substances
    C. Nitrogen and phosphorus
    D. Pesticides and herbicides
    E. Turbidity
    F. None of the Above

30. Solvents and pesticides contain toxic _____ such as benzene and toluene.
    A. Nutrients from wastewater
    B. Inorganic materials
    C. Inorganic minerals
    D. Excessive grease
    E. Organic compounds
    F. None of the Above

Oil and Grease (Scum)

31. Fatty organic materials from animals, vegetables, and petroleum are quickly broken down by bacteria and therefore are not a source of pollution.
    A. True B. False

32. The _____ of receiving waters is increased when large amounts of oils and greases are discharged from community systems.
    A. BOD
    B. Inorganic substances
    C. Nitrogen and phosphorus
    D. Bacteria
    E. Petroleum-based waste oils
    F. None of the Above

33. _____ adds to the scum layer in a septic tank, which in turn requires that the tank be pumped more often.
    A. Nutrients from wastewater
    B. Inorganic materials
    C. Inorganic minerals
    D. Excessive grease
    E. Nitrogen and phosphorus
    F. None of the Above

34. Hazardous wastes such as _____ should be collected and disposed of separately from wastewater.
    A. BOD
    B. Most inorganic substances
    C. Nitrogen and phosphorus
    D. Pesticides and herbicides
    E. Petroleum-based waste oils
    F. None of the Above

Inorganics

35. Residential and nonresidential sources both contribute inorganic minerals, metals, and compounds to wastewater.
    A. True B. False

36. Organisms in wastewater cannot easily break down _____, since these substances are relatively stable.
    A. Most organic substances
    B. Most inorganic substances
    C. Nitrogen and phosphorus
    D. Pesticides and herbicides
    E. Petroleum-based waste oils
    F. None of the Above

37. The removal of _____ from industrial wastewater sources often requires additional treatment steps.
    A. Nutrients from wastewater
    B. Inorganic materials
    C. Organic materials
    D. BOD
    E. DON
    F. None of the Above

38. Heavy metals in industrial wastewater discharges are difficult to remove by conventional treatment methods.
    A. True B. False

Nutrients

39. Wastewater normally contains an excess of available nutrients since organisms only require small amounts of nutrients during biological treatment.
    A. True B. False

40. The chief nutrients present in natural water that are essential to living organisms are _____.
    A. Oxygen
    B. Ecology
    C. Nutrient enrichment
    D. Carbon, nitrogen, and phosphorus
    E. Phosphorus and nitrogen
    F. None of the Above

41. Phosphorous and nitrogen cannot be substantially removed by conventional _____.
    A. Biofilm
    B. Contaminants
    C. Secondary treatment
    D. Secondary biological treatment processes
    E. Oxygen and organic waste
    F. None of the Above

42. An excess of nitrogen and phosphorous causes water plants to grow slowly.
    A. True B. False

43. Large amounts of nutrients, primarily _____ but sometimes nitrogen, cause nutrient enrichment that leads to excessive algae growth.
A. Phosphorus
B. Heavy metals
C. Nutrient enrichment
D. Excessive growth of algae
E. Nitrogen
F. None of the Above

44. Aquatic plants and animals are harmed when uncontrolled algae growth blocks out the sunlight, thereby depleting _____ in the water at night.
A. Pathogens
B. Dissolved oxygen
C. Nutrient enrichment
D. Excessive growth of algae
E. Phosphorus and nitrogen
F. None of the Above

45. When a waterbody cannot assimilate all of the nutrients, the resulting condition is called _____.
A. Toxic
B. Ecology
C. Nutrient enrichment
D. Eutrophication or cultural enrichment
E. Oxygen and organic waste
F. None of the Above

Application Specific Microbiology

46. Wastewater treatment plants use a methodology known as _____ to achieve the most efficient biological nutrient removal.
A. Mature biofilm
B. Activated sludge system
C. Advanced treatment technologies
D. Application-specific microbiology
E. Pretreatment and pollution prevention
F. None of the Above

47. Application-specific microbiology involves using the right laboratory-prepared bugs in the right growth environment to maximize the efficiency of organics removal.
A. True B. False

48. When starting up an activated sludge process, _____ can be purchased to reduce the time for growing a mature biofilm.
A. Mature biofilms
B. Activated sludge systems
C. Advanced treatment technologies
D. Application specific bacterial cultures
E. Pretreatment and pollution prevention
F. None of the Above

Hydrogen Sulfide and Ammonia

49. Hydrogen sulfide and _____ are gasses that can be toxic and pose asphyxiation hazards.
A. Ammonia
B. Wastewater odors
C. Air
D. Oxygen
E. Less oxygen
F. None of the Above

50. Ammonia as a dissolved gas in wastewater is not dangerous to fish.
A. True B. False

51. Cleaner sewers will produce less hydrogen sulfide because they will harbor _____.
A. Fewer slime bacteria
B. Wastewater odors
C. Hydrogen sulfide
D. BOD
E. Less oxygen
F. None of the Above

52. Hydrogen sulfide can be reduced by using _____ to precipitate sulfides, and by killing bacteria that produce hydrogen sulfide using lime treatments.
A. Dissolved oxygen
B. Salts of zinc and iron
C. Magnesium hydroxide
D. Biochemical oxygen demand, or BOD
E. Wastewater odors
F. None of the Above

53. The lack of oxygen causes _____ conditions to occur in the sewer system.
A. Slime bacteria
B. Wastewater odor
C. Hydrogen sulfide
D. Aerobic
E. Less oxygen
F. None of the Above

54. The mental well-being and _____ of residents can be affected by uncontained wastewater odors.
A. Attitude
B. Income
C. Quality of life
D. Political views
E. Social activities
F. None of the Above

Pollutants, Oxygen-Demanding Substances

55. Aquatic life needs _____ in the water to survive.
A. Dissolved oxygen
B. Oxygen-demand
C. Magnesium hydroxide
D. Biochemical oxygen demand, or BOD
E. Wastewater odors
F. None of the Above

56. The biochemical oxygen demand (BOD) of the effluent is not an indicator of how well a sewage treatment plant is working.
A. True B. False

57. If the wastewater treatment plant effluent has a high content of organics or ammonia, more _____ will be demanded from the receiving water. This will leave less oxygen to support fish and aquatic plants.
A. Slime bacteria
B. Wastewater odors
C. Hydrogen sulfide
D. Nitrogen
E. Oxygen
F. None of the Above

58. Both organic matter and _____ are called “oxygen-demanding” substances.
A. Dissolved oxygen
B. Ammonia
C. Magnesium hydroxide
D. Biochemical oxygen demand, or BOD
E. Wastewater odors
F. None of the Above

59. Domestic sewage and _____ all contribute oxygen-demanding substances to wastewater.
A. Slime bacteria
B. Wastewater odors
C. Hydrogen sulfide
D. The lack of oxygen
E. Agricultural and industrial wastes
F. None of the Above

60. If there is sufficient oxygen present in the water, oxygen-demanding substances are usually destroyed or converted to other compounds by the _____ in the water.
    A. Dissolved oxygen
    B. Nitrogen
    C. Magnesium hydroxide
    D. Biochemical oxygen demand, or BOD
    E. Bacteria
    F. None of the Above

Pathogens

61. Sewage from cities and institutions, industrial wastes from tanning and meat packing plants, and storm water runoff containing animal wastes can all be sources of pathogens in surface and ground water.
    A. True B. False

62. Modern disinfection techniques for wastewater and drinking water have greatly reduced the danger of waterborne disease.
    A. True B. False

Inorganic and Synthetic Organic Chemicals

63. Inorganic and synthetic organic chemicals are not toxic to fish and aquatic life.
    A. True B. False

64. Some inorganic and synthetic organic chemicals are _____ at very low concentrations.
    A. Highly poisonous
    B. Ecology
    C. Nutrient rich
    D. Safe for aquatic life
    E. Non-toxic to humans
    F. None of the Above

Thermal

65. The capacity of water to retain oxygen is reduced by _____.
    A. Heat
    B. Heavy metals
    C. Nutrient enrichment
    D. Excessive growth of algae
    E. Phosphorus and nitrogen
    F. None of the Above

66. The ecology of a lake or stream can be seriously altered by uncontrolled discharges of _____.
    A. Toxics
    B. Waste heat
    C. Nutrients
    D. Oxygen
    E. Phosphorus and nitrogen
    F. None of the Above

Other Important Wastewater Characteristics

Temperature

67. Temperatures ranging from 77 to 95 degrees Fahrenheit are probably best for wastewater treatment.
    A. True B. False

68. While warm temperatures accelerate biological processes and cool temperatures slow them down, _____ can stop treatment processes altogether.
    A. Oxygen
    B. High TSS
    C. Settling sediments
    D. Total Suspended Solids (TSS)
    E. Extreme hot or cold
    F. None of the Above

pH

69. Treatment processes and the environment are both affected by the acidity or alkalinity of the wastewater.
    A. True B. False

70. High pH indicates increasing acidity while a low pH indicates increasing alkalinity.
    A. True B. False

71. In order to protect organisms in the biological process, the _____ of the wastewater needs to remain between 6 and 9.
    A. Total Solids
    B. TDS
    C. pH
    D. Elevated hardness, salty taste, or corrosiveness
    E. Temperature
    F. None of the Above

72. Industrial or commercial discharges containing acids and other substances can alter the _____ of the wastewater and inactivate treatment processes.
    A. Total Solids
    B. TDS
    C. pH
    D. Elevated hardness, salty taste, or corrosiveness
    E. Temperature
    F. None of the Above

Conventional Wastewater Treatment - Primary

73. The initial stage in the wastewater treatment process is called primary treatment.
    A. True B. False

74. The primary treatment stage removes coarse solids from the wastewater. In some treatment plants, the _____ are combined into one operation.
    A. Solids
    B. Finer debris
    C. Grit and gravel
    D. Suspended growth processes
    E. Primary and secondary stages
    F. None of the Above

75. Many wastewater treatment plants have preliminary treatment units before primary and secondary treatment begins.
    A. True B. False

76. _____ are used in the secondary treatment stage to further purify wastewater.
    A. Very fine solids
    B. Biological processes
    C. Pollutants
    D. Primary sludge
    E. Grit and screenings
    F. None of the Above

Preliminary Wastewater Treatment

77. Preliminary treatment includes coarse screening, raw influent pumping, static fine screening, grit removal, and selector tanks.
    A. True B. False

78. The _____ from the collection system enters into the coarse screening process.
    A. Solid material
    B. Finer debris
    C. Grit and gravel
    D. Raw wastewater
    E. Dissolved organic and inorganic constituents
    F. None of the Above

79. After coarse screening, the wastewater my flow into a grit chamber to remove sand, grit, cinders, and small stones.
A. True B. False

80. It is very important to remove _____ that washes off city streets or land during storms, especially in cities with combined sewers.
A. Very fine solids
B. Grit and gravel
C. Pollutants
D. Primary sludge
E. Grit and screenings
F. None of the Above

81. Treatment plant pumps and other equipment can be damaged by large amounts of _____ entering the plant.
A. Solids
B. Finer debris
C. Inorganics
D. Grit and sand
E. Dissolved organic and inorganic constituents
F. None of the Above

82. In some wastewater treatment plants, another finer screen is used after the grit chamber to remove additional material that may damage equipment.
A. True B. False

83. The coarse screening is provided by a basket shaped bar screen. The screen collects larger debris which are then removed and sent to a landfill for disposal.
A. True B. False

84. After the raw influent pumping process, the _____ passes into the static fine screening process to remove finer debris not captured by the coarse screens.
A. Solids
B. Finer debris
C. Grit and gravel
D. Flow
E. Dissolved organic and inorganic constituents
F. None of the Above

85. After the static fine screening process, the wastewater flows into the _____ process which consists of two vortex grit separators that remove the finest grit debris.
A. Very fine solids
B. De-gritted wastewater
C. Grit removal
D. Primary sludge
E. Grit and screenings
F. None of the Above

86. The _____ removed by the preliminary treatment processes must be collected and disposed of in a landfill or incinerated.
A. Very fine solids
B. Wastewater
C. Pollutants
D. Primary sludge
E. Grit and screenings
F. None of the Above

Primary Sedimentation

87. After preliminary treatment, the wastewater still contains dissolved organic and inorganic constituents and suspended solids.
A. True B. False

88. Primary treatment processes, such as sedimentation or gravity settling, chemical coagulation, or filtration, are used to remove _____ from the wastewater.
A. Suspended solids
B. Sewage
C. Pollutants
D. Primary sludge
E. Grit and screenings
F. None of the Above

89. Pollutants that are dissolved in the wastewater are effectively removed by gravity settling.
A. True B. False

90. When the wastewater flow is slowed down in a sedimentation tank, the suspended solids gradually sink to the bottom. The resulting mass of solids is called _____.
A. Very fine solids
B. Wastewater pollution
C. Pollutants
D. Primary sludge
E. Grit and screenings
F. None of the Above

Secondary Treatment

91. After the primary treatment processes, the _____ flows to the secondary treatment processes.
A. Very fine solids
B. Wastewater
C. Pollutant load
D. Primary sludge
E. Grit
F. None of the Above

92. The _____ and the suspended growth processes are the most common conventional methods used to achieve secondary treatment.
A. Solids
B. Finer debris
C. Attached growth processes
D. Unsuspended growth processes
E. Organic matter
F. None of the Above

93. The secondary treatment stage includes a biological process, such as _____, and a physical process known as secondary clarification.
A. Wildlife habitat
B. Oxidation ditches
C. Denitrification
D. Phosphorus-reduction systems
E. Excessive sludge production
F. None of the Above

94. After preliminary treatment, the _____ are still present in the wastewater, since they cannot be removed by physical processes.
A. Very fine solids
B. Coarse debris
C. Grit and gravel
D. Suspended growth processes
E. Larger debris
F. None of the Above

95. The wastewater from preliminary treatment flows directly into the secondary clarifier.
A. True B. False

96. The _____ (which are primarily organic) are consumed by microorganisms within the oxidation basins. The microorganisms also adhere to the solids themselves.
    A. Total Solids
    B. TDS
    C. Very fine solids
    D. Grit and screenings
    E. Sludge
    F. None of the Above

97. The microorganisms in the oxidation basins consume and adhere to the finer solids. This causes _____ to form, which can be physically separated.
    A. Solids
    B. Finer debris
    C. Grit and gravel
    D. Larger and heavier aggregates
    E. Dissolved organic and inorganic constituents
    F. None of the Above

98. After the oxidation ditches, the wastewater enters the secondary clarification process.
    A. True B. False

Aerobic Processes

99. Activated sludge systems, lagoons, trickling filters and rotating disk contactors are the most common aerobic processes.
    A. True B. False

Nitrogen Control

100. Nitrogen in wastewater is usually not removed by secondary treatment.
    A. True B. False

101. Nitrogen in the form of _____ can consume oxygen or stimulate algae growth.
    A. Nitrification
    B. Ammonia
    C. Nitrogen
    D. Nitrogen in the nitrate form
    E. Ammonia to the non-toxic nitrate
    F. None of the Above

102. Ammonia in wastewater is not toxic to aquatic life.
    A. True B. False

103. A biological treatment process beyond the secondary stage uses nitrifying bacteria to convert ammonia to non-toxic nitrate. This process is called _____.
    A. Nitrification
    B. Denitrification
    C. Nitrogen
    D. Nitrogen in the nitrate form
    E. Biological treatment
    F. None of the Above

104. To remove nitrate from wastewater effluent, another _____ process can be added to convert nitrate to nitrogen gas.
    A. Nitrification
    B. Chemical
    C. Physical
    D. Primary
    E. Biological
    F. None of the Above

Conversion of Nitrate to Nitrogen Gas

105. Nitrate can be converted to _____ by bacteria in a process known as denitrification.
    A. Nitrogen gas
    B. Phosphorus
    C. Nitrogen
    D. Nitrate nitrogen
    E. Methanol
    F. None of the Above

Biological Phosphorus Control

106. Phosphorous needs to be removed from wastewater effluent to prevent excessive algal growth in the receiving waters.
    A. True B. False

107. One way to remove _____ is the addition of chemicals and a coagulation-sedimentation process.
    A. Nitrification
    B. Phosphorus
    C. Nitrogen
    D. Nitrate nitrogen
    E. Oxygen
    F. None of the Above

108. Biological nutrient removal (BNR) processes can remove _____.
    A. Both nitrogen and phosphorus
    B. Phosphorus
    C. Nitrogen
    D. Nitrate nitrogen
    E. Oxygen
    F. None of the Above

109. BNR processes are modified suspended growth treatment systems. The bacteria in these systems also convert _____ to inert nitrogen gas, and cause phosphorous to be trapped in the solids that are subsequently removed.
    A. Both nitrogen and phosphorus
    B. Phosphorus
    C. Nitrogen
    D. Nitrate nitrogen
    E. Oxygen
    F. None of the Above

Water Quality Criteria Section

110. According to the Clean Water Act, water quality criteria developed by the EPA must accurately reflect the latest scientific knowledge about the effects of pollutants on aquatic life and human health.
    A. True B. False

111. When developing water quality criteria, EPA examines the effects of specific pollutants on aquatic life, plant life, aesthetics, and recreation in any body of water.
    A. True B. False

Human Health Criteria

112. Humans can be exposed to water pollutants by drinking untreated surface water or eating fish or wildlife that have been contaminated by pollutants in surface water.
    A. True B. False

113. EPA scientists determine the levels for specific chemicals which are not likely to adversely affect human health.
    A. True B. False

Aquatic Life Criteria

114. The aquatic life criteria developed by EPA are numeric limits on the amounts of chemicals that can be present in the water without harming aquatic life.
A. True B. False

115. Aquatic life criteria do not provide protection for saltwater aquatic organisms.
A. True B. False

116. _____ protect aquatic organisms from death, slower growth, reduced reproduction, and the accumulation of toxic chemicals in their tissues.
A. Aquatic life criteria
B. Water pollutants
C. Water quality standards
D. Concentrations of pollutants
E. Pollutant levels
F. None of the Above

Sediment Quality Criteria Guidance

117. In a healthy aquatic community, _____ provide a habitat for worms, plants, and tiny microorganisms.
A. Pollutants
B. Algae
C. Sediments
D. Aquatic plants
E. Human health and aquatic life criteria
F. None of the Above

Pollutants in the Sediment

118. Bottom dwelling species can be protected by controlling the _____ in the sediment. This prevents harmful toxins from accumulating in animals at higher levels in the food chain.
A. Nitrogen level
B. Phosphorous level
C. Oxygen level
D. Concentration of pollutants
E. Bacteria
F. None of the Above

Biological Criteria

119. The natural condition of a water body is to be free from _____, habitat loss, and other negative stressors.
A. Allowable concentrations
B. The harmful effects of pollution
C. Water quality standards
D. Human activity
E. Aquatic life criteria
F. None of the Above

120. States can use methodologies developed by EPA to develop protective _____ for their waters.
A. Toxic pollutants
B. Food chains
C. Biological integrity
D. Biological treatments
E. Water quality standards
F. None of the Above

121. EPA methodologies describe _____ for determining the health of an aquatic community.
A. Allowable concentrations
B. Water quality criteria
C. A healthy aquatic community
D. Scientific methods
E. Human health and aquatic life criteria
F. None of the Above

The Microlife or Microorganisms

122. In wastewater treatment, carbonaceous BOD is degraded using _____.
   A. Carbonaceous BOD
   B. Attached growth processes
   C. Activated sludge processes
   D. Suspended growth processes
   E. Food-to-microorganism ratio, F/M
   F. None of the Above

123. Pilot plant and laboratory studies are required to design _____.
   A. Effluent quality
   B. Organic load
   C. Bacteria
   D. Nitrogen and phosphorus load
   E. Activated sludge plants
   F. None of the Above

124. An activated sludge process can be designed based on the amount of time the sludge spends in the system. This is referred to as the _____.
   A. Carbonaceous BOD
   B. Attached growth processes
   C. Mean cell residence time (MCRT)
   D. Suspended growth processes
   E. Food-to-microorganism ratio, F/M
   F. None of the Above

125. An activated sludge process can be designed based on the amount of food provided to the bacteria in the aeration tank. This is referred to as the _____.
   A. Carbonaceous BOD
   B. Attached growth processes
   C. Mean cell residence time (MCRT)
   D. Suspended growth processes
   E. Food-to-microorganism ratio, F/M
   F. None of the Above

Microorganisms in Lagoons and Activated Sludge

126. Three functional groups of aerobic bacteria found in the activated sludge process are: freely dispersed, single bacteria; floc-forming bacteria; and filamentous bacteria.
   A. True B. False

127. All groups of aerobic bacteria oxidize organic carbon (BOD) to produce CO_2 and new bacteria.
   A. True B. False

128. _____ readily oxidize BOD, but they do not settle and often leave the system in the effluent as solids (TSS).
   A. Strict aerobes
   B. Predators
   C. Single bacteria
   D. Heterotrophic bacteria
   E. Filamentous bacteria
   F. None of the Above

129. _____ grow in a large aggregate (floc).
   A. Treatment organisms
   B. Aerobic bacteria
   C. Stalked ciliates
   D. Floc-forming bacteria
   E. Filamentous bacteria
   F. None of the Above

130. The floc-forming bacteria degrade _____ and settle at the end of the process, resulting in a low TSS effluent.
   A. Anaerobic bacteria
   B. Dissolved oxygen
   C. BOD
   D. Aerobic bacteria
   E. Application-specific bacteria
   F. None of the Above

131. _____ can be found in lagoons at specific growth environments.
A. Activated sludge
B. Absence of free oxygen
C. Filamentous bacteria
D. Anaerobic bacteria
E. Application-specific bacteria
F. None of the Above

132. Filamentous bacteria do not cause operational problems in lagoons, but cause filamentous bulking and _____ in activated sludge processes.
A. Strict aerobes
B. Predators
C. Bacteria
D. Poor sludge settling
E. Many bacterial species
F. None of the Above

133. Aerobic BOD removal doesn't work very well from pH 6.5 to 9.0 and at temperatures from 3-4°C to 60-70°C.
A. True B. False

134. BOD removal decreases rapidly below 3-4°C and ceases at 1-2°C.
A. True B. False

135. Ammonia can be oxidized to nitrate by _____.
A. Strict aerobes
B. Predators
C. Nitrifying bacteria
D. Heterotrophic bacteria
E. Many bacterial species
F. None of the Above

Bacteria Section

136. Bacteria shapes can be round spheres (cocci), cylindrical (rods), or twisted, bent, or curved rods (spirilla).
A. True B. False

137. Tightly coiled up bacteria are called _____.
A. Cocci
B. Rods
C. Balls
D. Spiral
E. Spirochaetes
F. None of the Above

138. Bacteria do not live alone, but live together in clumps, chains, or planes.
A. True B. False

139. _____ live in chains, one after the other, and often have long thin cells.
A. Biofilm bacteria
B. Filamentous bacteria
C. Some bacteria
D. Activated sludge bacteria
E. Omnivores
F. None of the Above

140. A plane or thin layer of bacteria over the surface of an object is called _____.
A. Filamentous Bacteria
B. A biofilm
C. Application-specific bacteria
D. Either anaerobic or aerobic conditions
E. Anaerobic to aerobic state
F. None of the Above

141. _____ secrete sticky substances that form the gel in which they live.
A. Biofilm bacteria
B. Filamentous bacteria
C. Some bacteria
D. Activated sludge bacteria
E. Omnivores
F. None of the Above

Filamentous Bacteria

142. Filamentous bacteria found in wastewater function similar to _____. They degrade BOD well and add stability and backbone to the floc structure.
    A. Biofilm bacteria
    B. Filamentous bacteria
    C. Some bacteria
    D. Activated sludge
    E. Floc forming bacteria
    F. None of the Above

143. The floc structure created by filamentous bacteria keeps the floc from breaking up or shearing due to the turbulence from pumps, aeration, or transfer of the water.
    A. True B. False

Site Specific Bacteria

144. The efficient degradation of organic matter depends on two key operational parameters – aeration and biofilm building.
    A. True B. False

145. _____ become site-specific over time as the biofilm develops and matures. The site-specific bacteria are even more effective in treating the waste stream at that particular treatment plant.
    A. Anaerobic action
    B. Absence of free oxygen
    C. Facultative bacteria
    D. Aerobic bacteria
    E. Application-specific bacteria
    F. None of the Above

Facultative Bacteria

146. Facultative bacteria can survive and multiply in either anaerobic or aerobic conditions.
    A. True B. False

147. Facultative bacteria will be _____ unless oxygen is added to the water.
    A. Anaerobic
    B. Site-specific bacteria
    C. Facultative bacteria
    D. Aerobic
    E. Application-specific bacteria
    F. None of the Above

148. When oxygen is added to the environment of facultative bacteria, the metamorphosis from _____ takes place within a couple of hours.
    A. Filamentous bacteria
    B. Facultative bacteria
    C. Application-specific bacteria
    D. Site-specific bacteria
    E. Anaerobic to aerobic state
    F. None of the Above

Anaerobic Bacteria

149. _____ live and reproduce when free oxygen is absent.
    A. Site-specific bacteria
    B. Anaerobic bacteria
    C. Facultative bacteria
    D. Aerobic bacteria
    E. Application-specific bacteria
    F. None of the Above

150. Organic material in an anaerobic treatment system must be exposed to _____ and/or detained for a much longer period of time to remove a given amount of organic material.
A. Nitrogen
B. Free oxygen
C. Air
D. Aerobic bacteria
E. A significantly higher quantity of bacteria
F. None of the Above

151. Septic tanks use _____ to break down organic material.
A. Filamentous organisms
B. Floc particles
C. Organic material
D. Anaerobic bacteria
E. Biosurfactant trehalose
F. None of the Above

152. _____ can be hazardous because they release hydrogen sulfide and methane gas.
A. Filamentous Bacteria
B. Anaerobic bacteria
C. Application-specific bacteria
D. Either anaerobic or aerobic conditions
E. Aerobic bacteria
F. None of the Above

153. Because of _____, hydrogen sulfide or explosive methane gas can accumulate in the collection system and be life-threatening.
A. Anaerobic action
B. Free oxygen
C. Facultative bacteria
D. Aerobic bacteria
E. Application-specific bacteria
F. None of the Above

Aerobic Bacteria

154. Aerobic bacteria require free oxygen to live and multiply.
A. True B. False

155. Facultative bacteria become aerobic when oxygen is present.
A. True B. False

156. Since the metabolism of aerobes is much higher than _____, organic material can be removed with 90% fewer organisms or in 90% less time compared to the anaerobic process.
A. Anaerobic action
B. Anaerobes
C. Facultative bacteria
D. Aerobic bacteria
E. Application-specific bacteria
F. None of the Above

Bugs or MOs Section

Paramecium sp.

157. Paramecium is a _____ commonly present in activated sludge. It is medium to large size (100-300 µm).
A. Shelled amoebas
B. Euglypha
C. Vorticella
D. Stalked ciliate
E. Swimming ciliate
F. None of the Above

158. Paramecium is _____ over the entire body surface, allowing it to swim with a smooth gliding motion.
A. Round-shaped
B. Inflexible
C. Coiled
D. Stalked
E. Uniformly ciliated
F. None of the Above

159. _____ swim freely in the water column and filter suspended bacteria from the water.
A. Shelled amoebas
B. Euglypha
C. Vorticella
D. Stalked ciliates
E. Paramecium
F. None of the Above

Vorticella sp.

160. Vorticella is a _____ found in activated sludge that ranges in length from 30 to 150 µm.
A. Shelled amoeba
B. Euglypha
C. Vorticella
D. Stalked ciliate
E. Paramecium
F. None of the Above

161. Characteristics of a Vorticella organism include: oval to round shape; contractile stalk; domed feeding zone; and a water vacuole located near the terminal end of the feeding cavity.
A. True B. False

162. Except during cell division, one organism is found on each Vorticella stalk
A. True B. False

163. After reproducing, the offspring of a Vorticella develops swimming cilia and forms its own stalk.
A. True B. False

164. The organism expelled during the reproduction of a Vorticella is called a _____.
A. Shelled amoebas
B. Euglypha
C. Vorticella
D. Swarmer
E. Paramecium
F. None of the Above

165. A bunch of empty _____ indicates poor conditions in an activated sludge system, such as low DO or toxicity.
A. Shelled amoebas
B. Euglypha
C. Vorticella stalks
D. Stalked ciliates
E. Ciliates
F. None of the Above

Euglypha sp.

166. Euglypha are _____ with jelly-like bodies and range in size from 70 to 100 µm.
A. Shelled amoebas
B. Euglypha
C. Vorticella
D. Stalked ciliates
E. Paramecium
F. None of the Above

167. Euglypha move and feed on bacteria by extending the pseudopodia outward in long, thin, rays.
A. True B. False

168. Since Euglypha adapt to a wide range of conditions, they are good indicator organisms.
A. True B. False

Euchlanis sp.

169. Euchlanis is a typical _____. It uses cilia rimmed around its head and a foot with two strong swimming toes for locomotion. It also has a transparent body.
    A. Euglypha
    B. Shelled amoebas
    C. Rotifers
    D. Euchlanis
    E. Spirochaetes
    F. None of the Above

170. Euchlanis is _____ that eats detritus, bacteria, and small protozoa.
    A. Euglypha
    B. Shelled amoeba
    C. An omnivore
    D. Euchlanis
    E. Spirochaetes
    F. None of the Above

171. The presence of Euchlanis in _____ is evidence that aerobic conditions have be sustained, and that effluent quality is good.
    A. Biofilm
    B. Plant effluent
    C. Some bacteria
    D. Activated sludge
    E. Wastewater
    F. None of the Above

Activated Sludge – Organic Load Methods

Organic Load

172. The organic loading from primary treatment processes enters the reactor (aeration basin) where the active microbial population is present.
    A. True B. False

173. The mixture of wastewater, oxygen, and microorganisms flows from the aeration basin to a secondary clarifier where the cells (microorganisms) are settled. The settled microorganisms are also called waste activated sludge.
    A. True B. False

174. The treated wastewater leaves the secondary clarifier and is disinfected and discharged. Part of the activated sludge is recycled to the aeration basin.
    A. True B. False

175. The flocculating characteristics of the cells improve the longer they are retained in the system, since they start to produce extra cellular slime which favors _____.
    A. Secondary settling
    B. High degradation rate
    C. Flocculating
    D. Organic load
    E. Settled biomass
    F. None of the Above

Common Types

176. In the conventional activated sludge process, baffles in the aeration tank cause the wastewater to circulate along the aeration tank in _____.
    A. Plug flow mode
    B. Laminar flow mode
    C. 24 to 48 hours
    D. Higher organic load
    E. Settled biomass
    F. None of the Above

177. In the conventional activated sludge process, the organic load concentration and the oxygen demand are both maximum at the inlet to the aeration tank.
    A. True B. False

178. In the completely mixed activated sludge process, wastewater inflow streams enter the aeration basin at several points to facilitate the homogeneity of the mixing.
A. True B. False

Basic System Components of Activated Sludge

179 Organic matter in the wastewater mixes with previously developed biological floc particles and oxygen in the aeration tank. The organic matter is a food and energy source for the microorganisms, and is converted into cell tissue. The oxidized end product is mainly carbon dioxide, CO_2.
A. True B. False

180. The mixture of wastewater and organisms in the aeration tank is referred to as mixed liquor.
A. True B. False

Total Dissolved Solids

181. _____ is often called the universal solvent because it picks up impurities easily.
A. Treatment processes
B. Total dissolved solids (TDS)
C. Quality of the water
D. Wastewater
E. Water
F. None of the Above

182. Any minerals, salts, metals, cations or anions dissolved in water are referred to as _____.
A. Total Solids
B. TDS
C. pH
D. Elevated Hardness, Salty Taste, or Corrosiveness
E. Dissolved solids
F. None of the Above

183. Inorganic salts and some small amounts of organic matter that are dissolved in water are referred to as _____.
A. Treatment processes
B. Total dissolved solids (TDS)
C. Quality of the water
D. Both treatment and the environment
E. Universal solvent
F. None of the Above

184. Total dissolved solids in drinking water come from natural sources, sewage, urban run-off, industrial wastewater, and water treatment chemicals.
A. True B. False

185. Natural environmental features causing elevated _____ include mineral springs, carbonate deposits, salt deposits, and sea water intrusion.
A. Total Solids
B. TDS
C. pH
D. Hardness, Salty Taste, or Corrosiveness
E. Wastewater temperature
F. None of the Above

186. The sum of the cations (positively charged ions) and anions (negatively charged ions) in the water is the definition of _____ concentration.
A. Treatment processes
B. Total dissolved solids (TDS)
C. Quality of the water
D. Both treatment and the environment
E. Universal solvent
F. None of the Above

187. The TDS test provides only a qualitative measure of the amount of dissolved ions. The test does not provide the nature or ion relationships.
A. True B. False

188. Water quality issues such as elevated hardness, salty taste, or _____ cannot be evaluated using the TDS test.
A. Total Solids
B. TDS
C. pH
D. Corrosiveness
E. Wastewater temperature
F. None of the Above

189. _____ refers to suspended or dissolved matter in water and wastewater. This property is related to both specific conductance and turbidity.
A. Total Solids
B. TDS
C. pH
D. Elevated Hardness, Salty Taste, or Corrosiveness
E. Wastewater temperature
F. None of the Above

190. Material left in a container after evaporation and drying of a water sample is called _____ (also referred to as total residue).
A. Treatment processes
B. Total dissolved solids (TDS)
C. Quality of the water
D. Total solids
E. pH
F. None of the Above

Total Suspended Solids (TSS)

191. Solids in water that can be trapped by a filter are called Total Suspended Solids (TSS).
A. True B. False

192. Silt, decaying plant and animal matter, industrial wastes, and sewage are all included in _____.
A. Total Solids
B. TDS
C. pH
D. TSS
E. Wastewater
F. None of the Above

193. _____ can reduce the amount of light passing through the water to reach submerged vegetation, slowing down photosynthesis.
A. Total Solids
B. TDS
C. pH
D. Hydrogen sulfide
E. High TSS
F. None of the Above

194. A reduced rate of photosynthesis causes more dissolved oxygen to be released into the water by plants.
A. True B. False

195. If high TSS completely blocks the light, bottom dwelling plants will stop producing oxygen and die.
A. True B. False

196. Bacteria from decomposing plants will use up even more oxygen from the water, which can lead to fish kills.
A. True B. False

197. Because the suspended particles absorb heat and light, _____ can raise the surface water temperature. Warmer water can hold less dissolved oxygen, which in turn can harm aquatic life.
A. Oxygen
B. High TSS
C. Settling sediments
D. Hydrogen sulfide
E. Suspended sediment
F. None of the Above

198. The eggs of fish and aquatic insects can be smothered when suspended solids settle to the bottom of a water body.
A. True B. False

199. _____ can damage the aquatic habitat by filling in spaces between rocks that could have been homes to aquatic organisms.
A. Oxygen
B. Organic material
C. Settling sediments
D. Hydrogen sulfide
E. Suspended sediments
F. None of the Above

200. High TSS can often mean higher concentrations of pollutants such as bacteria, nutrients, pesticides, and metals in the water.
A. True B. False