7. WATER - OUR LIFE LINE
SOLUTIONS

TEACHING TASK

JEE MAINS LEVEL QUESTIONS

1. Which of the following is a stage in wastewater treatment?
A) Filtration B) Aeration C) Chlorination D) All of the above
Answer:D
Solution:Filtration, aeration, and chlorination are all key stages in wastewater treatment.
2. Which of the following is a source of wastewater?
A) Industry B) Household C) Hospital D) All of the above
Answer:D
Solution:Industries, households, and hospitals all generate wastewater.
3. The process of removing pollutants in water before it enter a water body is called
A) cleaning of water B) refining C) filtering of water D) none of these
Answer:A
Solution:The general term for this treatment is "cleaning of water" or wastewater treatment.
4. Wastewater released by homes, factories, industries and other users is known as
A) polluted water B) sewage C) both A and B D) none of these
Answer:C
Solution: Wastewater released by homes, factories, industries and other users is known as both polluted water and sewage.
5. A network of big and small pipes under the ground for wastewater management is known as
A) sewage B) sewerage C) manhole D) channel
Answer:B
Solution:"Sewerage" refers to the system of pipes, not the wastewater itself.
6. Solid waste extracted during sewage treatment is known as
A) sewage B) sludge C) biogas D) contaminants
Answer:B
Solution: Sludge is the semi-solid residue left after wastewater treatment.
7. Name the scraper that removes solids like forced from the wastewater.
A) Skimmer B) Sludge C) Tank D) All of these
Answer:A
Solution:A skimmer removes floating solids and oils from wastewater surfaces.
8. The equipment that removes floatable particles from wastewater is
A) sludge B) bar screen C) skimmer D) sedimentation tank
Answer:C
Solution:Skimmers remove oils, grease, and other floatables from the surface.
9. In a filtration plant, water is filtered using layers of
A) sand and clay B) clay and fine gravel
C) sand and fine gravel D) Sand, fine gravel and medium gravel

Answer:D

Solution:Filtration plants use a multi-layered system of sand, fine gravel, and medium gravel to effectively filter out impurities from water. The different sized particles trap progressively smaller contaminants as the water passes through, resulting in cleaner water

10. Which of the following is waste water?

A) Water trickling from a damaged tap. B) Water coming out of a shower.

C) Water flowing in a river. D) Water coming out of a laundry.

Answer:D

Solution: Water coming out of a laundry -Contains detergents/contaminants; shower water is also wastewater but not listed as clearly.

11. Chlorine is used in the municipal water treatment to

A) increase the taste of water B) prevent the evaporation

C) kill the harmful microorganisms D) prevent sedimentation

Answer:C

Solution: Chlorination disinfects water by killing bacteria and viruses.““

JEE ADVANCED LEVEL QUESTIONS

Multi correct answer type:

12. Consider the following statements which are correct

A) Clean water is a basic necessity of our life.

B) The wastewater may also contain pieces of human excreta.

C) Use water or waste water could not be reused after cleaning it.

D) The cleaning of water is a process of removing pollutants harmful substances from it.

Answer:A,B,D

Solution: A) Clean water is a basic necessity of our life.

(True - Access to clean water is essential for survival.)

B) The wastewater may also contain pieces of human excreta.

(True - Sewage often includes human waste.)

C) Used water or wastewater could not be reused after cleaning it.

(False - Treated wastewater can be reused for irrigation, industrial processes, etc.)

D) The cleaning of water is a process of removing pollutants and harmful substances from it.

(True - This is the core purpose of water treatment.)

13. Read the following sentences carefully, and choose the correct ones

A) Use water is waste water which can be recycled.

B) Wastewater is treated in a sewage treatment plant.

C) By products of wastewater treatment are sludge and biogas.

D) Sewage is a liquid waste which causes water pollution.

Answer:A,B,C,D

Solution: A) Used water is wastewater which can be recycled.

(True - Wastewater can be treated and reused.)

B) Wastewater is treated in a sewage treatment plant.

(True - STPs are designed for this purpose.)

C) By-products of wastewater treatment are sludge and biogas.

(True - Sludge is a solid waste, and biogas is produced during anaerobic

digestion.)
D) Sewage is a liquid waste which causes water pollution.
(True - Untreated sewage contaminates water bodies.)

Assertion and Reason Type:

A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion.
B) Both Assertion and Reason are true, but Reason is NOT the correct explanation for Assertion.
C) Assertion is true, but Reason is false.
D) Assertion is false, but Reason is true.

14. Assertion : Water is vital for human survival
Reason : Our bodies are about 60% water, and we need a constant supply to maintain bodily functions

Answer:A

Solution: Water is essential for processes like digestion, circulation, and temperature regulation — and our body is largely composed of water.

15. Assertion : Sludge is the solid waste settled at the bottom of the sewage water
Reason : A skimmer removes the floatable solids like oil and grease

Answer:B

Solution:Both statements are correct, but they describe different parts of the sewage treatment process: sludge settles at the bottom; skimmers remove floatables from the top.

Comprehension type:

Sanitation, disease prevention, and sewage disposal are interconnected aspects of public health and environmental management. Proper sanitation practices and effective sewage disposal are essential for preventing the spread of diseases and maintaining a healthy living environment.

16. Which of the following comes under sanitization
A) Toilets and Sanitary Facilities B) Personal Hygiene
C) Waste management D) All the above

Answer:D

Solution:Toilets, hygiene, and waste management are all key aspects of sanitation.““

17. Are essential for preventing the spread of diseases and maintaining a healthy living environment.
A) Proper sanitation practices B) Effective sewage disposal
C) Both A & B D) None

Answer:C

Solution: Proper sanitation and sewage disposal together prevent contamination and disease spread.

Match the following

18.

Column - I	Column - II
A) removing grit and sand	1) Sludge
B) removed with a scraper	2) Filteration
C) removes the floatable solids	3) Screening
D) removed by sand drying beds	4) Skimmer

Answer:A-3,B-1,C-4,D-2

Solution:

A) removing grit and sand	3) Screening
B) removed with a scraper	1) Sludge
C) removes the floatable solids	4) Skimmer
D) removed by sand drying beds	2) Filteration

Integer Type

19. Percentage of water on earth is _____

Answer:71

Solution: About 71% of Earth's surface is covered with water.

20. Percentage of water in humans is _____

Answer:60

Solution: On average, the human body is made up of about 60% water, though it can range from 50–70% depending on age, gender, and body composition.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS

1. Water that is not fit for use is called

A) clean water B) waste water C) both A and B D) none of these

Answer:B

Solution:Wastewater refers to contaminated or used water unsuitable for direct use

2. The period of International Decade for action on 'Water for Life' is

A) 2000 – 2010 B) 2005 – 2015 C) 2010 – 2020 D) 2003 – 2013

Answer:B

Solution:The UN declared 2005–2015 as the Water for Life Decade to promote water sustainability.

3. Which of the following is a step of wastewater treatment?

A) Aeration B) Chlorination C) Filtration D) All of these

Answer:D

Solution:Aeration, chlorination, and filtration are all essential steps in the wastewater treatment process.

4. What is the full form of WWTP?

A) Wastewater treatment plant B) Wreckagewater treatment plant

C) Both A and B D) None of the above

Answer:A

Solution: WWTP stands for Wastewater Treatment Plant, where sewage is cleaned before release.

5. World water day is celebrated every year on _____.

A) 21 March B) 21 June C) 22 March D) None of the above

Answer:C

Solution: 22nd March is observed globally as World Water Day to raise awareness about water issues.

6. Bacteria present in sewage can cause-

A) Cholera B) T.B C) AIDS D) Malaria

Answer:A

Solution: Cholera is a waterborne disease caused by bacteria present in contaminated water.

7. The percentage of water in activated sludge is about

A) 92% B) 90% D) 97% D) 87%

Answer:C

Solution:Activated sludge is ~97% water and 3% solids

8. A word related to hygiene is

A) sewage B) sanitation C) sludge D) wastewater

Answer:B

Solution:Sanitation refers to public health conditions like clean water and waste disposal.

9. Polluted water causes the disease

A) Asthma B) Hemorrhage C) Tuberculosis D) Typhoid

Answer:D

Solution:Typhoid is a waterborne disease caused by drinking contaminated water.

10. The chemical used to disinfect the clarified water is

A) alum B) zinc C) chlorine D) nitrogen

Answer:C

Solution: Chlorination is a common method to disinfect water and kill harmful microorganisms.

11. Sewage is a

A) solid waste B) liquid waste C) metallic waste D) gaseous waste

Answer:B

Solution:Sewage primarily refers to liquid waste from households and industries.

JEE MAINS LEVEL QUESTIONS

1. Which organism converts human excreta into vermi-cakes in vermi processing toilets?

A) Bacteria B) Earthworms C) Microorganisms D) None

Answer:B

Solutions:Earthworms help decompose human waste into vermi-cakes, a nutrient-rich compost.

2. Which of the following can be decomposed in an aerated tank?

A) Organic matter B) Inorganic matter C) Both A and B D) None

Answer:A

Solutions: Organic matter (like food waste and human waste) decomposes with the help of aerobic bacteria in aerated tanks.

3. Which one of the following is a quality of wastewater?

A) Foul smell B) Bad taste C) Dirty look D) All of these

Answer:D

Solutions:Wastewater typically has a foul smell, bad taste, and dirty appearance.““

4. Which of the following is used kill the microorganisms present in water?

A) Iodine B) Sodium C) Chlorine D) Calcium

Answer:C

Solutions:Chlorine is widely used to disinfect water and kill harmful microorganisms.

5. The clarified water is further cleaned by
A) aerobic bacteria. B) anaerobic bacteria. C) adding an acid. D) adding a salt.
Answer:A
Solutions: Aerobic bacteria break down remaining organic matter in clarified water
6. A risk for public health is when
A) untreated sewage is allowed to flow directly into rivers.
B) treated sewage is allowed to flow directly into rivers.
C) covered drainage systems are used.
D) chemical toilets are used.
Answer:A
Solutions:Untreated sewage contaminates water sources, spreading diseases like cholera and typhoid
7. The breeding place for flies and mosquitoes is
A) open drain system. B) closed drain system.C) septic tanks. D) composting pits.
Answer:A
Solutions:Open drains contain stagnant water and waste, making ideal breeding grounds for disease-carrying insects.
8. The substance produced during wastewater treatment used as manure is
A) sludge B) bio-gasC) rags and plastic packets D) floatable solids
Answer:A
Solutions:Sludge is rich in nutrients and can be dried and used as manure in agriculture.
9. Organic impurities in the wastewater are
A) phosphates B) metals C) animal wastes D) nitrates
Answer:C
Solutions: Animal waste is an organic impurity, while phosphates and nitrates are chemical pollutants, and metals are inorganic.
10. The sewage disposal systems suitable for places lacking sewerage system are
A) chemical toilets B) septic tanks. C) composting pits D) dry riverbeds.
Answer:A,B,C
Solutions:The sewage disposal systems suitable for places lacking sewerage systems are A) chemical toilets, B) septic tanks, and C) composting pits.

JEE ADVANCED LEVEL QUESTIONS

Multi correct answer type:

11. Which of the following statement is or are correct?
A) Water that is fit for use and safe for drinking is known as clean water.
B) The dissolved and suspended impurities present in water are called contaminants.
C) The gas that is produced by decomposition of sludge by the anaerobic bacteria is known as biogas.
D) All the above.
Answer:D
Solution:A: Clean water is safe for consumption.
B: Contaminants include both dissolved (e.g., nitrates) and suspended (e.g., sand) impurities.

C: Anaerobic digestion of sludge releases methane-rich biogas.
12. Recently, in a science class test, you are asked a question where you have to say which the statements are correct
A) Bacteria which can grow and multiply in absence of free oxygen are called anaerobic bacteria.
B) Water which is cleared from the floatable substances like oil and grease by a skimmers is called clarified water.
C) Waste water solids like faeces, which settle down at the bottom of a large t tank and are removed with a scraper are called sludge.
D) None of the above.
Answer:A,B,C
Solution: A) Bacteria which can grow and multiply in absence of free oxygen are called anaerobic bacteria.
B) Water which is cleared from the floatable substances like oil and grease by skimmers is called clarified water.
C) Wastewater solids like faeces, which settle down at the bottom of a large tank and are removed with a scraper are called sludge.
13. In a quiz competition, you are asked a question where you have to choose the statement which are correct?
A) Poor sanitation in crowded public places can result in the spread of diseases.
B) Open dirty water drains are breeding place for flies, mosquitoes and other disease-causing organisms.
C) If all the wastes produced at public places are not disposed at of regularly and properly, even epidemics could break out.
D) Only the responsibility of the municipality of the area to maintain sanitization or hygienic condition.
Answer:A,B,C
Solution:Sanitation is a shared responsibility (D is incorrect).
Open drains and poor waste management directly link to disease spread (A, B, C are correct).

Assertion and Reason Type:

A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion.
B) Both Assertion and Reason are true, but Reason is NOT the correct explanation for Assertion.
C) Assertion is true, but Reason is false.
D) Assertion is false, but Reason is true.
14. Assertion : Sewage formation should be decreased as it leads to the pollution of water
Reason : Chemicals should not be discharged into the drain as they may kill the microbes that help purify water.
Answer:B
Solution:Assertion (True): Sewage does pollute water if untreated.
Reason (True but unrelated): While chemical discharge harms microbes, this doesn't explain why sewage formation itself should be reduced (the Assertion focuses on quantity, not chemical content).

15. Assertion : Cholera speads due to contamination
Reason : Poor sanitation and contaminated drinking water are the major cause of spreading of various diseases

Answer:A

Solution:Assertion is true: Cholera is a waterborne disease spread through contaminated water.
Reason is true: Poor sanitation and unsafe drinking water are key causes of such contamination, explaining how cholera spreads.

Match the following

16. Column - I	Column - II
A) Waterborne Diseases	1) Dengue
B) Vector-Borne Diseases	2) Water and food contamination
C) Cryptosporidiosis	3) Typhoid
D) Hepatitis A	4) Parasitic infections

Answer:A-3,B-1,C-4,D-2

Solution:

A) Waterborne Diseases	3) Typhoid
B) Vector-Borne Diseases	1) Dengue
C) Cryptosporidiosis	4) Parasitic infections
D) Hepatitis A	2) Water and food contamination

Integer Type

17. How many years Water for life efforts made to reduce by half the number of people who do not have access to safe drinking water?

Answer:A

Solution: The International Decade for Action: Water for Life lasted from 2005 to 2015, totaling 10 years.

18. How many stages involved in the purification of water in waste water treatment?

Answer:A

Solution:Primary treatment – Removal of large solids and grit
Secondary treatment – Biological treatment using microbes
Tertiary treatment – Advanced filtration and disinfection (e.g., chlorination)

KEY

				TEACHING TASK					
			JEE MAINS LEVEL QUESTIONS						
1	2	3	4	5	6	7	8	9	10
D	D	A	C	B	B	A	C	D	D
11									
C									
			JEE ADVANCED LEVEL QUESTIONS						
12	13	14	15	16	17	18		19	20
A,B,D	A,B,C,D	A	B	D	C	A-3,B-1,C-4,D-2		71	60
				LEARNERS TASK					
				CUQ'S					
1	2	3	4	5	6	7	8	9	10
B	B	D	A	C	A	C	B	D	C
11									
B									
			JEE MAINS LEVEL QUESTIONS						
1	2	3	4	5	6	7	8	9	10
B	A	D	C	A	A	A	A	C	A,B,C
			JEE ADVANCED LEVEL QUESTIONS						
11	12	13	14	15	16		17	18	
D	A,B,C	A,B,C	B	A	A-3,B-1,C-4,D-2		A	A	