

Wastewater Story

Exercise – 1

Multiple Choice Questions

DIRECTIONS: The following questions has four choices (a), (b), (c) and (d) out of which only one is correct. You have to choose the correct alternative.

1. Out of the following, select those that would help to reduce water pollution.
(i) use of sewers for removal of urban waste
(ii) use of unleaded petrol in cars
(iii) spraying of pesticides on plants
(iv) We should not excrete in open.
(a) (i) and (ii) (b) (iii) and (iv)
(c) (i), and (iv) (d) All of these
2. Select the one that is incorrect for vermin processing toilet.
(a) It is a new method and has been recently tested in India.
(b) It is a novel, low water use toilet that is safe for processing of human waste
(c) In it the human excreta is treated by round worms and cockroaches
(d) In it the human excreta is completely converted to vermi-cakes
3. The international decade for action on "water for life" by United Nations General Assembly was declared on
(a) Jan, 26 (b) March, 22
(c) April, 14 (d) None of these
4. Sewage refers to waste water that is released by
(a) homes (b) industries
(c) offices (d) All of the above
5. Select the disease that is not caused by improper disposal of sewage.
(a) Cholera (b) Typhoid
(c) Heart attack (d) Jaundice
6. In a waste water treatment plant, after passing the waste water through a grit and sand removal tank, the water is allowed to settle in a large tank. The solids that settle at the bottom of large tank and called
(a) sewage (b) sullage
(c) sludge (d) activated sludge
7. Which plant is suggested for purification of sewage pond water?
(a) waste water plant (b) Eucalyptus plant
(c) urena plant (d) None of these
8. Which of the following group is against the plantation of Eucalyptus trees?
(a) Paper manufacturers
(b) Wild life protection group
(c) Environmentalists
(d) Matches manufacturers
9. Sewage treatment
(a) is a process of waste water treatment.
(b) refers to waste water that is released by homes, industries, hospitals etc.
(c) refers to the rain water that run down the streets during heavy rains.
(d) All of the above
10. The impurities present in sewage may consist of
(a) organic substances
(b) inorganic substances
(c) Nutrients
(d) All of the above
11. Select those which are organic substances present in waste water.
(a) pesticides
(b) herbicides
(c) fruit and vegetable waste
(d) All of the above
12. Treatment plants
(a) reduce pollutants in waste water to a level where nature can take care of it.
(b) makes the waste water free of all pollutants
(c) Both the above are correct
(d) None of these
13. The sludge waste originates from
(a) kitchen
(b) toilets
(c) industrial organizations
(d) commercial organizations
14. In the treatment of waste water, following steps are involved.
(i) aeration
(ii) nitration
(iii) chlorination
The correct order of these steps is

- (a) (i),(iii),(ii) (b) (iii), (ii), (i)
(c) (i),(ii),(iii) (d) (ii),(iii)(i)
- 15.** When waste water is passed through bar screens in WWTP, it removes
(a) plastic packets (b) sand
(c) grit (d) All of the above
- 16.** Which of the following are removed by use of A skimmer in WWTP?
(a) Oils (b) Greases
(c) Both of these (d) None of these
- 17.** The percentage of water in activated sludge is about
(a) 90% (b) 92%
(c) 95% (d) 97%
- 18.** What are the products of waste water treatment system?
(a) sludge (b) biogas
(c) Both of these (d) None of these
- 19.** Liquid waste consisting of suspended impurities is called _____.
(a) sewage (b) contaminant
(c) slurry (d) sludge
- 20.** What is the full form of WWTP
(a) Waste water travel plant
(b) Waste water treatment plant
(c) Waste water therapy plant
(d) Waste water tropical plant
- 21.** Water scarcity problem is increasing day by day because of
(a) population growth
(b) industrial development
(c) pollution
(d) All of the above
- 22.** We should not throw cooking oil and paint down the drain because
(a) they break the pipe
(b) they harden and clog the pipe
(c) they flow through the drain freely
(d) None of these
- 23.** Which of the following is a good practice be followed?
(a) Cooking oil and paint should not be thrown down a drain.
(b) Used tea leaves, solid food and cotton should not be thrown in the drain.
(c) Chemicals like insecticides should not thrown in the drain.
(d) All of the above
- 24.** The technique of watering plants by making use of narrow tubing's which deliver water directly at the base of the plant is
(a) river lift irrigation (b) tube wells
(c) lawn sprinkling (d) drip irrigation
- 25.** Which of the following is a water borne disease?
(a) cholera (b) Typhoid
(c) Jaundice (d) All of these
- 26.** A resource much needed for soil is
(a) septic tank
(b) vermic processing toilet
(c) chemical toilet
(d) composting pit
- 27.** Sewage is generated from mainly
(a) hospitals (b) houses
(c) factories (d) offices
- 28.** Aeration of water during waste water treatment removes
(a) Bacteria (b) Germs
(c) Human Waste (d) Sand
- 29.** Which process during waste water treatment helps in eliminating germs?
(a) Aeration (b) Sedimentation
(c) Chlorination (d) Flocculation
- 30.** Which of the following diseases caused by drinking contaminated waste?
(a) Pneumonia (b) Small Pox
(c) Malaria (d) Cholera
- 31.** Drain get blocked by
(a) germs and bacteria (b) oil and fat
(c) paints and chemicals (d) Both (b) and (c)
- 32.** Dried _____ is used as manure
(a) sludge (b) slurry
(c) sewage (d) sand
- 33.** Which of the following can be used to disinfect water?
(a) Bleaching Powder (b) Chlorine tablets
(c) Both (a) and (b) (d) None of these
- 34.** Water pollution is caused by
(a) washing clothes (b) human excreta

- (c) chemicals (d) All of the above
35. Water borne disease is
(a) Anthrax (b) Typhoid
(c) Malaria (d) All of the above
36. The impurities present in sewage are called _____.
(a) Contaminants (b) Grit
(c) Organic (d) Inorganic
37. The manholes in a sewage system are located at every ____ m.
(a) 40-50 (b) 50-60
(c) 60-70 (d) 10-20
38. The network of big and small pipes that forms a sewage is called _____.
(a) Septic lines (b) Clarifier
(c) Drain (d) Sewers
39. Which of the following trees should be planted along sewage ponds?
(a) Neem (b) Eucalyptes
(c) Peepal (d) Banyan
40. In vermi-processing toilet the human excreta is treated by
(a) Redworm (b) Tapeworm
(c) Earthworm (d) Roundworm

Match the column

DIRECTIONS: Match Column-I with column II and select the correct answer using the codes given below the columns.

41.

Column-I	Column-II
(A) Pesticides, herbicides, fruits and vegetable waste etc.	(p) Inorganic waste in waste water
(B) Nitrates, Phosphates, metals etc.	(q) Organic waste in waste water
(C) Nitrogen, Phosphorus	(r) Nutrients in waste water
(D) Cholera causing bacteria	(s) Bacteria in waste water

- (a) A→(p); B→(q); C→(r); D→(s)
(b) A→(q); B→(p); C→(r); D→(s)
(c) A→(q); B→(p); C→(s); D→(r)
(d) A→(p); B→(q); C→(s); D→(r)

42.

Column-I	Column-II
(A) Sewage	(p) Suspended impurities present in sewage.
(B) Contaminants	(q) Phosphorus and Nitrogen
(C) Nutrients present as suspended impurities in waste water.	(r) Liquid waste which causes water and soil pollution
(D) Inorganic impurities present in waste water	(s) Phosphates and nitrates

Passage Based Question

DIRECTIONS: Read the passage given below and answer the questions that follow.

Passage - 1

Sewage is a complex mixture containing suspended solids, organic and inorganic impurities, nutrients, saprotrophic and disease causing bacteria and other microbes. Consider the following waste present in sewage and answer the questions.

- (i) Animal waste
(ii) Fruit and vegetable waste
(iii) Nitrates
(iv) Phosphates
(v) Phosphorus
(vi) Nitrogen

43. The organic impurities are :-
(a) (i) and (ii) only (b) (i), (ii), (iii) only
(c) (i) only (d) (ii) only
44. The inorganic impurities are: -
(a) (i) and (ii) only
(b) (i), (ii), (iii) and (iv) only
(c) (iii) to (vi)
(d) (v) and (vi) only
45. The nutrients present in impurity in sewage are
(a) (iii), (iv) and (v) (b) (i), (ii) and (vi)
(c) (ii), (iv) and (vi) (d) (v) and (vi)

Passage - 2

Treatment of waste water involves physical, chemical and biological processes, which remove physical, chemical and biological matter that contaminates the waste water.

46. In WWTP, in one of the steps, the water is allowed to settle in large tank which is sloped

towards the middle. In it impurities settle at the bottom. These settled impurities are called

- (a) Sewer
- (b) skimmer
- (c) sludge
- (d) activated sludge

47. The treated water coming out of WWTP
- (a) has very low level of organic material and suspended impurities.
 - (b) is free of organic material and suspended impurities.
 - (c) Both the above are correct
 - (d) None of these
48. Biogas is one of the products at WWTP. Biogas can be used
- (a) as a fuel
 - (b) to produce electricity
 - (c) Both the above
 - (d) None of these

Passage – 3

Poor sanitation and contaminated drinking water is a cause of large number of diseases. To improve sanitation, low cost on-site sewage disposal systems are being encouraged.

49. Various water borne diseases are
- (a) hepatitis
 - (b) meningitis
 - (c) cholera
 - (d) All of these
50. Untreated human excreta is a health hazard because it may cause
- (a) water pollution
 - (b) soil pollution
 - (c) Both the above
 - (d) None of these

Assertion/ Reason Based Questions

DIRECTIONS: The questions in this segment consists of two statements, one labeled as "Assertion A" and the other labeled as "Reason R". You are to examine these two statements carefully and decide if the Assertion A and Reason R are individually true and if so, whether the reason is a correct explanation of the assertion. Select your answers to these items using codes given below.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

51. Assertion (A): Cleaning of water is a process of removing pollutants before it enters a water body

Reason (R): The process of cleaning of water and removal of pollutants from it is called "sewage treatment"

52. Assertion (A): Sewage is a liquid waste.
Reason (R): The dissolved and suspended impurities present in sewage are known as contaminants.
53. Assertion (A): The underground network of big and small pipes that carries sewage from point of being produced to the point of disposal is known as sewerage;
Reason (R): In sewerage manholes are located at every 30 m to 40 m.
54. Assertion A: We should not consume contaminated water.
Reason R: Dirty water contain toxic chemicals and germs that can cause diseases

Statement Based Questions

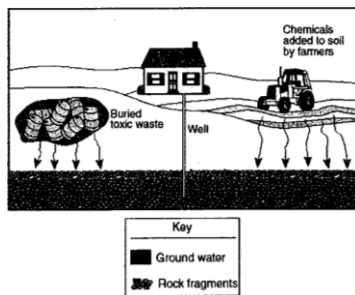
DIRECTIONS: Read the following two statements carefully and choose the correct options.

- (a) Statement (i) is correct while statement (ii) is incorrect.
 - (b) Statement (ii) is correct while statement (i) is incorrect.
 - (c) Both statements are correct.
 - (d) Both statements are incorrect.
55. (i) Ozone is used to disinfect water
(ii) Chlorine is used to disinfect water
56. (i) Sewage is a complex mixture
(ii) Sewage is a solid waste
57. (i) Wastes released by houses is called sewage
(ii) Waste that originates from kitchen is called sludge
58. (i) Trade wastes originates from houses
(ii) Sludge wastes originates from kitchen

Figure Based Questions

DIRECTIONS: Carefully observe pictures given below and answer the following questions.

59. The diagram below shows some ways in which groundwater can be affected by humans.



Which statement is best supported by the diagram?

- (a) Chemicals applied by farmers lower the level of pollution in drinking water.
- (b) Drinking water can become polluted from unsuspected sources.
- (c) Human activities do not affect groundwater.
- (d) Toxic waste is safe if buried below the level of the basements of nearby homes.

Exercise – 2

Multiple Choice Questions

DIRECTIONS: The following questions has four choices (a), (b), (c) and (d) out of -which only one is correct. You have to choose the correct alternative.

1. Sewage is
(a) waste water that is released by homes, industries, hospitals, offices etc.
(b) rain water that has run down the street during a storm or heavy rain.
(c) liquid waste which causes water and soil pollution.
(d) All the above are correct.
2. Trade waste, refers to
(a) waste that originates from kitchens
(b) waste that originates from toilets.
(c) waste that originates from industrial and commercial organizations.
(d) All the above
3. Vermi-processing toilet
(a) is a design of toilet in which human excreta is treated by round worm.
(b) is a design of toilet in which human excreta mis treated by earthworm.
(c) Both the above are correct
(d) None of these is correct.
4. The depletion of water table is due to
(a) increased use of water for industrial activities
(b) increase in use of water for agricultural activities.
(c) scarcity rainfall
(d) All of the above
5. How does increase in populations a cause for depletion of water table?
(a) Requirement of more houses
(b) Requirement of more food
(c) Requirement of more roads etc.
(d) All of these
6. After passing that through bar screens the waste water goes to a grit and sand removed tank. Here the speed of incoming waste water is decreased
(a) to keep the system under control
(b) to allow sand, grit and pebbles to settle down.
(c) to allow foul smell to disappear
(d) All the above are correct
7. The recommended quantity of water for use person per day according to United Nation recommendation is $A \times 10$ Liters where A is
(a) 1 (b) 3
(c) 5 (d) 7
8. Effluent is generated mainly from
(a) Industries (b) Offices
(c) Houses (d) Hospitals
9. Which process can remove dirt and sand from waste water?
(a) Chlorination (b) Sedimentation
(c) Flocculation (d) Aeration
10. Jaundice affects which organ?
(a) Stomach (b) Liver
(c) Lungs (d) Heart
11. Which process can be used to make sea water fit for drinking?
(a) Filtration (b) Boiling
(c) Chlorination (d) Reverse osmosis
12. By providing clean water and sanitation to the poorest people on the planet, we can reduce poverty and suffering and ensure education for all children. The above words are given by:
(a) UNO (b) UNESCO
(c) WHO (d) UNICEF
13. Which of the following are biodegradable wastes?
(a) Excreta (b) Sewage
(c) Plastic (d) Both (a) & (b)
14. Which of the following are non-biodegradable wastes?
(a) Paper (b) Vegetables
(c) Wood (d) Polythene
15. These choke the drains
(a) Liquid wastes (b) Plastic
(c) Excreta (d) All of these
16. Sewage includes
(a) solid waste that goes down the drains
(b) Liquid waste that goes down the drains
(c) Plastics that are stuck in drains
(d) Both (a) and (b)
17. This kills the microbes that help to purify water
(a) Paints (b) Motor oil
(c) Medicines (d) All of these

18. By product of water treatment are
 (a) Sludge (b) Biogas
 (c) Sludge & Biogas (d) None of these
19. Breeding place for mosquito flies which cause diseases are
 (a) Oil (b) Open drain
 (c) Close tank (d) None of these
20. The organic part of solid material which is removed from sewage includes
 (a) Animal excreta
 (b) Vegetable matter
 (c) Human excreta
 (d) All of these

Match the Column

DIRECTIONS: Match column I with column II and select the correct answers using the code given below the columns.

21.

Column-I	Column-II
(A) Organic waste	(p) Dysentery
(B) Inorganic waste	(q) Phosphorus
(C) Nutrient waste	(r) Tea leaves
(D) Bacteria	(s) Metals

- (a) (A) → (s), (B) → (r), (C) → (q), (D) → (p)
 (b) (A) → (r), (B) → (s), (C) → (p), (D) → (q)
 (c) (A) → (r), (B) → (s), (C) → (q), (D) → (p)
 (d) (A) → (q), (B) → (r), (C) → (p), (D) → (s)

22.

Column-I	Column-II
(A) Aeration	(p) Chlorine tablets are added
(B) Chlorination	(q) Passes through layer of sand
(C) Filtration	(r) Air is bubbled

- (a) (A) → (q), (B) → (p), (C) → (r)
 (b) (A) → (p), (B) → (q), (C) → (r)
 (c) (A) → (r), (B) → (q), (C) → (p)
 (d) (A) → (r), (B) → (p), (C) → (q)

Passage Based Questions

DIRECTIONS: Read the passage given below and answer the questions that follow.

Passage – 1

Vermi Processing toilet has been tested in India and has been found to be a novel, low water use toilet. This process is simple and hygienic.

23. What is used to treat the human waste in these toilets?
 (a) Chemicals (b) Earthworms
 (c) Both (a) and (b) (d) None of these
24. What is the product obtained from processing of human excreta?
 (a) Cow dung cake (b) Vermi cake
 (c) Fruit cake (d) None of these
25. Which of the following is a better housekeeping practice?
 (a) Throwing oils down the drain
 (b) Excreting in the open
 (c) Using Vermi toilets
 (d) All of these

Passage – 2

There are various steps involved in the treatment of polluted water before it can be made fit for human consumption.

26. What is the first step involved in treatment of polluted water?
 (a) Chlorination (b) Aeration
 (c) Filtration (d) None of these
27. Which is the second step?
 (a) Chlorination (b) Aeration
 (c) Filtration (d) Flocculation
28. Why is chlorine tablet added?
 (a) To kill germs (b) To remove dirt
 (c) Both (a) and (b) (d) None of these

Assertion/Reason Based Questions

DIRECTIONS: The questions in this segment, consists of two statements, one labeled as "Assertion A" and the other labeled as "Reason R". You are to examine these two statements carefully and decide if the Assertion A and Reason R are individually true and if so, whether the reason is a correct explanation of the assertion. Select your answers to these items using codes given below.

- (a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) A is false but R is true.

- 29.** Assertion (A): In a WWTP, waste water is y' passed through bar screens, where large objects are removed.
Reason (R): Dried sludge is used as a manure returning organic matter, water and nutrients to the water
- 30.** Assertion (A): Poor sanitation and contaminated drinking water is the cause of large number of diseases.
Reason (R): Where underground sewerage systems and refuse disposal systems are not available, the low cost on-site sanitation system can be adopted.
- 31.** Assertion A: We should not excrete in the open
Reason R: Poor sanitation and contaminated water cause a number of diseases.
- 32.** Assertion A: Soft toys, used tea leaves, paints and oils should not be thrown in the drain.
Reason R: These wastes choke the drain and do not allow free flow of oxygen thus hampering the degradation process.

Statement Based Questions

DIRECTIONS: Read the following two statements carefully and choose the correct options.

- (a) Statements (i) and (iii) are incorrect but (ii) is correct.
(b) Statements (i) and (ii) are incorrect but (iii) is correct.
(c) All statements are correct.
(d) All statements are incorrect.
- 33.** (i) Wastes that originates from industrial and commercial organizations are called sludge.
(ii) House waste that comes from kitchen is called food waste.
(iii) Sewage waste does not cause water pollution.
- 34.** (i) Waste water is treated in a sewage treatment plant.
(ii) Cleaning of water is a process of removing the pollutants before polluted water is reused.
(iii) There are organic as well as inorganic impurities in water.
- 35.** (i) The decade 2015-2025 is declared as the international decade for action on "Water for Life" by UN General Assembly

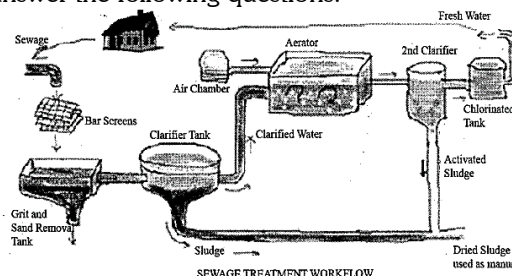
(ii) March 25 is celebrated as the World Water Day

(iii) In this decade efforts will be made to reduce by half the number of people who do not have access to safe drinking water.

- 36.** (i) The inorganic impurities present in waste water are herbicides, pesticides, oil etc.
(ii) The organic impurities are phosphates, metals, nitrates etc.
(iii) There are no germs/bacteria present in waste water.

Figure Based Questions

DIRECTION: Carefully observe pictures given below and answer the following questions.



Look at the above diagram of sewage treatment plant and answer the questions that follow.

- 37.** Why are bar screens used?
(a) To remove germs
(b) To remove sand and grit
(c) To remove cans, plastics, napkins etc
(d) To remove oil and grease
- 38.** What is the use of skimmer?
(a) It removes sand
(b) It removes oil and grease
(c) It helps in settling solid wastes
(d) It is used as a filter
- 39.** What are the products of waste water treatment system?
(a) Sludge (b) Biogas
(c) Both a and b (d) Vermi cakes
- 40.** What is clear water known as?
(a) Clarified water (b) Polluted water
(c) Freshwater (d) Slurry

Hints & Solutions

Exercise – 1

Multiple Choice Questions

1. (c)
2. (c) In it the human excreta is treated with earth worms.
3. (b) It was declared in 22 March, 2005.
4. (d)
5. (c)
6. (c) It is called sludge.
7. (b)
8. (c)
9. (a) (b) and (c) refer to sewage.
10. (d)
11. (d)
12. (a)
13. (a)
14. (c)
15. (a)
16. (c)
17. (d)
18. (c)
19. (a)
20. (b)
21. (d)
22. (b)

23. (d)

24. (d)

25. (d)

26. (b)

27. (b)

28. (c)

29. (c)

30. (d)

31. (d)

32. (a)

33. (c)

34. (d)

35. (b)

36. (a)

37. (b)

38. (d)

39. (b)

40. (c)

Match the Column

41. (b)

42. (c)

Passage Based Question

43. (a)

44. (c)

45. (d)

46. (c)

47. (a)
 48. (c)
 49. (d)
 50. (c)
 51. (b) Both (A) and (R) are correct but Reason (R) is not the correct explanation of Assertion (A).
 52. (b)
 53. (c) Assertion is correct, Reason is incorrect the manholes are located at 50 m to 60 m in a sewerage.
 54. (a)

Statement Based Questions

55. (c)
 56. (a)
 57. (c)
 58. (b)

Figure Based Questions

59. (b)

EXERCISE – 2

Multiple Choice Questions

1. (d)
 2. (c)
 3. (b)
 4. (d)
 5. (d)
 6. (b)
 7. (c) It is 50 liters (i.e. 5 x 10).
 8. (a)
 9. (b)

10. (b)
 11. (d)
 12. (d)
 13. (d)
 14. (d)
 15. (b)
 16. (d)
 17. (d)
 18. (c)
 19. (b)
 20. (b)

Match the Column

21. (c)
 22. (d)

Passage Based Questions

23. (b)
 24. (b)
 25. (c)
 26. (b)
 27. (c)
 28. (a)

Assertion/Reason Based Questions

29. (c) The organic matter and nutrients are returned to soil and not water.]
 30. (b)
 31. (a)
 32. (a)

Assertion/Reason Based Questions

- 33.** (d)
- 34.** (c)
- 35.** (b) Decade 2005-2015 was declared as the International Decade for action on "Water for Life". March 22nd is "World Water Day"
- 36.** (d) It is vice-versa. Diseases causing germs/ bacteria are present.

Figure Based Questions

- 37.** (c)
- 38.** (b)
- 39.** (c)
- 40.** (a)