CHEMISTRY

BOOKS - PEARSON IIT JEE FOUNDATION

WATER-A WONDER LIQUID

Example

1. Four samples of natural water from different sources are taken in four petri dishes in equal

quantities. These are marked as A, B, C, D and kept in an oven till the entire water vaporizes. When they were taken out, it is observed that sample marked 'C' left maximum amount of residue while sample marked 'B' left negligible amount of residue. 'A' and 'D' left almost same amount of residue.

Identify B and C

Watch Video Solution

2. Four samples of natural water from different sources are taken in four petri dishes in equal quantities. These are marked as A, B, C, D and kept in an oven till the entire water vaporizes. When they were taken out, it is observed that sample marked 'C' left maximum amount of residue while sample marked 'B' left negligible amount of residue. 'A' and 'D' left almost same amount of residue.

Predict the sources of A and D

Watch Video Solution

3. In what way, are electric water purifiers superior to the ceramic water filters for the purification of water for domestic purposes?

View Text Solution

4. How can you make a saturated solution dissolve greater amount of solute in it?

Watch Video Solution

Test Your Concepts Very Short Answer Fill In The Blanks

1. _____ is the largest source of natural water.

Watch Video Solution

2. Water suitable for accurate laboratory work can be obtained by _____

Watch Video Solution

3. _____impart freshness and sparkling appearance to water.

4. _____ water is rich in minerals which have medicinal value.

5. The gaseous form of water at 100°C is known as _____

Watch Video Solution

6. In very cold places, water vapour condenses to produce_____

Watch Video Solution

7. The specific heat capacity of water is _____

Watch Video Solution

8. The value of latent heat of fusion of ice is _____

Watch Video Solution

9. The density of pure water at 4° C is _____

Watch Video Solution

10. The rain water is devoid of ___ impurities

Watch Video Solution

11. The water fit for human consumption is called _____

Watch Video Solution

12. Water acts as a ___ solvent.

Watch Video Solution

13. _____and ___ gases are present in dissolved state in natural water.

Watch Video Solution

14. When vaporization and condensation of water are carried out simultaneously, the process is known as _____

Watch Video Solution

15. A solution which cannot dissolve any more amount of solute in it is called _____

Watch Video Solution

16. The liquid obtained by the condensation of vapour is called ____

Watch Video Solution

17. Purification of drinking water in cities involves passing water through beds of ____ and ____

Watch Video Solution

18. The settling down of suspended matter at the bottom of a liquid is known as_____

Watch Video Solution

19. The removal of germs from water is called _____

20. _____ proved that water is compound containing hydrogen and oxygen.

21. Which of the following is considered to be a method of sterilization?

A. Boiling

B. Exposure to sunlight

C. Chlorination

D. All of these

Answer: D

Watch Video Solution

22. Addition of which substance hastens the process of sedimentation in water?

A. Potash alum

B. Bleaching powder

C. Chlorine

D. Sand

Answer: A

Watch Video Solution

23. Ozonization of water removes which of the following impurities?

A. Fine particles of sand

B. Large suspended particles

C. Microorganisms

D. All of the above

Answer: C

Watch Video Solution

24. Identify the least effective method for the removal of germ from water.

A. Boiling

B. Exposure to air and sunlight

C. Chlorination

D. Ozonization

Answer: B

Watch Video Solution

25. Which of the following water samples is used in car batteries?

A. River water

B. Chlorinated water

C. Distilled water

D. Tap water

Answer: C

Watch Video Solution

Test Your Concepts Very Short Answer Select The Correct Alternative

1. Identify the water which can neither be used for irrigation nor for drinking

A. River water

B. Sea water

C. Rain water

D. Well water

Answer: B

Watch Video Solution

2. Identify the process which is not a part of water cycle.

A. Evaporation

B. Condensation

C. Transpiration

D. Sublimation

Answer: D

Watch Video Solution

3. Which of the following water samples ts totally devoid of suspended impurities?

A. River water

B. Rain water

C. Spring water

D. Ocean water

Answer: C

Watch Video Solution

4. Identify the sample of water which does not possess any taste.

A. Well water

B. Distilled water

C. Rain water

D. River water

Answer: B

Watch Video Solution

5. One gram of steam is condensed to water at 100°C. Which of the following complies with this process?

A. 540 cal of heat is absorbed

B. 80 cal of heat is absorbed

C. 540 cal of heat is released

D. 80 cal of heat is released

Answer: C

 Watch Video Solution

6. Units for specific heat capacity of a substance are

A. $\mathrm{cal}/\mathrm{g}/^{\circ}C$

B. $\mathrm{cal}\ \mathrm{g}/^{\circ}C$

C. cal/g

D. cal/$^{\circ}C$

Answer: A

Watch Video Solution

Test Your Concepts Short Answer

1. Distinguish between a well and a spring.

Watch Video Solution

2. Define the underground water

Watch Video Solution

3. Define the latent heat of fusion of ice

Watch Video Solution

4. Define the latent heat of vaporization of water

Watch Video Solution

5. Define specific heat capacity .

Watch Video Solution

6. Water is said to be transparent, colourless and tasteless liquid. However, drinking water has some taste. Explain.

Watch Video Solution

7. How is hydro power generation carried out?

Watch Video Solution

8. The taste of spring water differs from place to place. Justify.

Watch Video Solution

9. All the rivers ultimately drain into seas. However, river water is not saline while sea water is saline. Why?

Watch Video Solution

10. Well water is considered to be safer for consump- tion than river water. Give reason

Watch Video Solution

11. Explain the role of water in controlling the climate.

Watch Video Solution

12. Explain the principle involved in the usage of hot water bottles to warm beds in cold countries.

Watch Video Solution

13. In cold countries hot water pipes are arranged inside the concrete floors and walls. Give reason

Watch Video Solution

14. 100 g of water and 100 g of steam are comidcred at 100° C. What is the extra amount of heat energy possessed by steam than water?

Watch Video Solution

15. Calculate the heat required to convert 250 g of ice into water at the same temperature $(0^{\circ} C)$.

Watch Video Solution

16. 50 g of pure water is taken at $20^{\circ} C$. What is the amount of heat required to raise its temperature to $80^{\circ} C$?

Watch Video Solution

17. Water in swimming pools remains cool even during hot summer. Give reason.

Watch Video Solution

18. Some ice cubes are kept in a beaker and a ther- mometer is placed in it. What could be the change in temperature observed in the thermometer? Justify?

Watch Video Solution

19. One day, Rashnu went to a market along with her father on a hot afternoon. Her father parked his bike outside the market. They came back after 2 hours and found that the seat was

very hot. Her father poured a bottle of water slowly on the seat. A.fter a while they could comfortably sit and travel on the bike. Give justification.

Watch Video Solution

20. Water is considered as the universal solvent. Give reason

Watch Video Solution

21. Between chlorination and ozonization of water, which is a more effective method? Why?

Watch Video Solution

22. Some amount of purple coloured potassium per- manganate is added to a beaker of water and stirred. How can you separate the component from the above mixture? Is it possible to recover back both the components? Explain.

Watch Video Solution

23. Distilled water is not fit for consumption. Give reason.

Watch Video Solution

24. The solubility of a certain substance does not change with temperature. How can you make an unsaturated solution of such substance saturated?

Watch Video Solution

25. Does the size of the solute particles affect the solubility of the substance? Explain.

Watch Video Solution

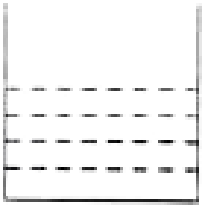
26. How can heating affect the formation of a solution?

Watch Video Solution

27. Explain how exposure of water to air and sunlight purify water? To what extent this method is effective?

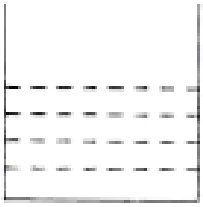
Watch Video Solution

28. A river water sample is poured in four containers and subjected to four different processes as shown in the following diagram.



A

Addition of potash alum and filtration



B

Filtered water subjected to boiling

C

Water subjected to evaporation and distillation

D

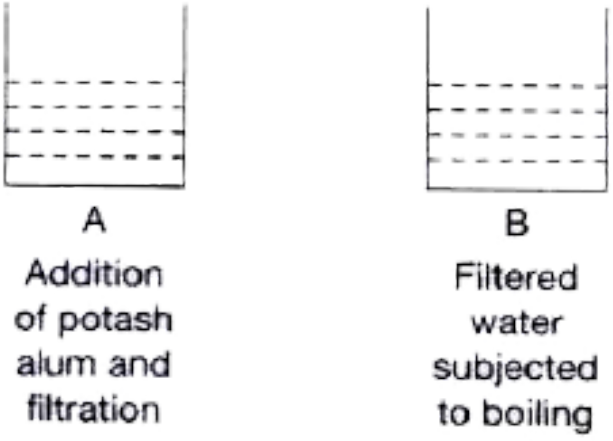
Water subjected to filtration and passing of ozone

Answer the following questions by analysing the given diagram

Which water is the most suitable for consumption?

View Text Solution

29. A river water sample is poured in four containers and subjected to four different processes as shown in the following diagram.



C

Water subjected to evaporation and distillation

D

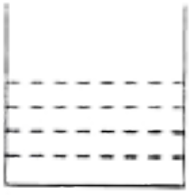
Water subjected to filtration and passing of ozone

Answer the following questions by analysing the given diagram

What are the disadvantages of other water samples?

View Text Solution

30. A river water sample is poured in four containers and subjected to four different processes as shown in the following diagram.



A

Addition of potash alum and filtration

B

Filtered water subjected to boiling

C

Water subjected to evaporation and distillation

D

Water subjected to filtration and passing of ozone

Answer the following questions by analysing the given diagram

What happens when fish are placed in the containers A, B, C and D?

View Text Solution

31. How do fertilizers cause water pollution?

Watch Video Solution

Concept Application

1. Calculate the amount of heat required to convert 10 g of ice at $0^{\circ}C$ to 10 g of water at $100^{\circ}C$. (Specific heat capacity of water = 1 cal/g/$^{\circ}$C)

A. 200 cal

B. 1800 cal

C. 2200 cal

D. 1600 cal

Answer: B

Watch Video Solution

2. Identify the false statement among the following:

A. At $100^\circ C$ both water and steam exist

B. Density of water is maximum at $0^\circ C$.

C. Rain water is pure natural form of water.

D. At $100^\circ C$ the temperature of water remains constant.

Answer: B

Watch Video Solution

3. Which among the following is not an application of dissolved gases in water?

A. Taste of water

B. Photosynthesis of aquatic plants

C. Salinity of sea water

D. Respiration of aquatic organisms

Answer: C

Watch Video Solution

4. Which among the following is not a sterilization method of water?

A. Boiling

B. Chemical treatment

C. Exposure to sunlight

D. Sedimentation

Answer: D

Watch Video Solution

5. Which among the following process is not involved in water cycle?

A. Melting

B. Evaporation

C. Sublimation

D. Condensation

Answer: C

Watch Video Solution

Assessment Test Test 1

1. Distinguish between surface water (fresh water) and underground water with respect to composition.

Watch Video Solution

2. Define water cycle.

Watch Video Solution

3. Mention the identification test for water.

Watch Video Solution

4. Define solution

Watch Video Solution

5. Define the solute

Watch Video Solution

6. Define the term: Solvent

Watch Video Solution

7. Define the Potable water

Watch Video Solution

8. The solubility of a certain substance is 40 at $25^{\circ} C$. What does it mean?

Watch Video Solution

9. What is the main objective of rain water harvesting ?

Watch Video Solution

10. Why monsoon is so important?

Watch Video Solution

11. Why do we see water droplets (dew) on leaves in winter?

Watch Video Solution

12. What happens if it does not rain for a long period?

Watch Video Solution

13. First shower of rain water is not pure. Why?

Watch Video Solution

14. Sea water is not fit for drinking. Why?

Watch Video Solution

15. Tina kept two similar plates with equal amount of water, one in sunlight and other in her room.

From which plate does water disappear first? Give reason.

Watch Video Solution

16. Why rain clouds look grey in colour?

Watch Video Solution

17. Why during winter more fog occurs in areas where more trees are there?

Watch Video Solution

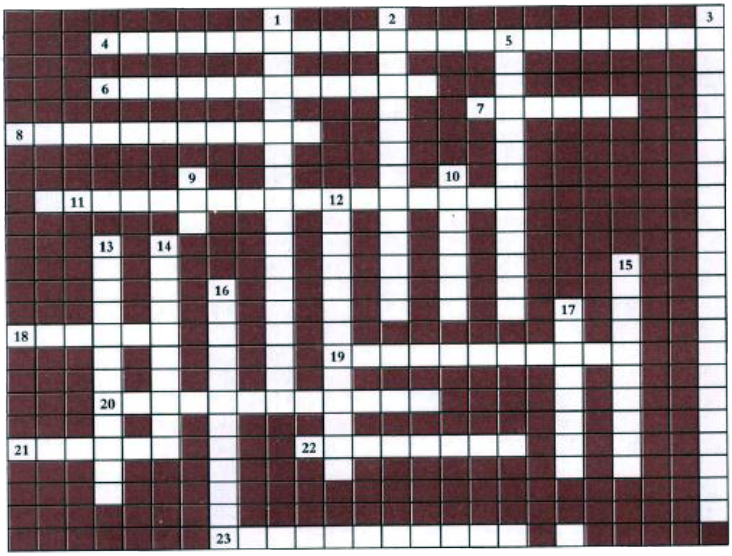
18. The process of condensation plays an important role in bringing water back to the

surface of earth. How does it happen?

Watch Video Solution

Crossword

1.



Across

4. Solution containing more amount of solute than its capacity

6. Water safe for consumption

7. Useful product generated from cowdung

8. Maximum amount of solute to be dissolved per 100 grams of water

11. Liquid which can dissolve variety of substances

18. Balls of ice falling along with rain water

19. Water having medicinal value

20. Killing bacteria by producing nascent oxygen

21. Gaseous form of water above $100^\circ C$

22. Homogeneous mixture of two or more components

23. Water from seas and ocean

Down

1. Heat required melting ice to water at $0^\circ C$

2. Addition of unwanted substances to water by human activity

3. Substance used for the identification of moisture

5. Settling down of suspended particles

9. A form of liquid water

10. Physical property of water having maximum value at $4^\circ C$

12. Removal of microorganisms

13. Heat required to raise the temperature by $1^{\circ} C$

14. Substance added to hasten the process of sedimentation

15. Passage of water through sand and gravel

16. Constructions help to preserve rain water

17. Gaseous form of water below boiling point

Watch Video Solution