

## Lesson 1



Complete:

1. Water covers about .... % of Earth surface
2. Freezing water is formed in cold regions as .....
3. .... is the life river in Egypt
4. Water vapour is found in .....
5. Water cycle start with .....
6. .... process helps in clouds formation
7. Ground water is formed through ...  
.....
8. When water vapour reacts with some chemical compounds, ..... is formed
9. Water falls from clouds in form of ..... or .....
10. Plants share in water cycle through ..... process.
11. Acidic rain cause .....
12. Water molecule consists of two atoms of ..... and one atom of ..... are bonded with ..... bond with angle .....
13. Hydrogen bonds are found among water molecules due to .....

Use these words

Hydrogen bond - Electronegativity - water molecules  
- negative - dissolving - positive

14. Oxygen atom in water molecule has higher  
..... than hydrogen

15. Difference in electronegativity in water  
molecule cause the formation of .....  
charge on oxygen atom, and .....  
charge on hydrogen atom.

16. .... bonds are between water  
molecules.

17. Water polarity helps water to .....  
many compounds

18. When table salt dissolves in water,  
its ions are surrounded by .....

19. .... is the responsible power for  
high boiling point of water.

Use these words

change - basic - acidity - hydrogen - hydroxide -  
water ionization

20. Very small percentage of water molecules  
are found in form of ..... ions and .....  
ions.

21. Hydrolysis of salts in water causes .....  
in equilibrium of their ions.

22. Increase concentration of hydroxide ions  
causes water .....



23. .... salts are salts that increase concentration of hydrogen ions on their hydrolysis.
24. The process in which water is changed into hydrogen ions and hydroxide ions.
25. Most of fresh water on Earth is in .....
26. Glacier has .... water

### Match

1) Hydrogen ions

2) Water Hydrolysis

3) NaCl Table salt

4) Sodium bicarbonate

5) Ammonium chloride  $\text{NH}_4\text{Cl}$

a) Salt hydrolysis in water to give acid and base that formed the salt

b) Form neutral solution

c) Responsible for increase in solution acidity

d) Form acidic solution

e) Form basic solution.

Put (✓) or (x)

- 1) Acid-base equilibrium in water depend mainly on hydrogen ions only.
- 2) pH value range from 0 to 14.
- 3) As concentration of hydroxide ions  $\text{OH}^-$  increase, acidity of solution increase.
- 4) pH of pure water is 7.
- 5) As pH value decrease, solution alkalinity increase.
- 6) Change in pH in natural environment does not affect the living organisms.
- 7) pH of a solution is 3 is acidic.
- 8) pH measure liquid acidity and not alkalinity.
- 9) Water has variable pH in different environments.
- 10) Distilled water has same pH as sea water.

Answer:

- 1) What is the pH value for sea water? Explain
- 2) What are the factors affecting pH of fresh water in rivers and lakes.
- 3) Why do pH of distilled water is 7?
- 4) What are the factors that affect pH of groundwater?
- 5) Why do clouds have pH less than 7?
- 6) What are factors that cause change in pH for groundwater?
- 7) What is the relation between rock structure and pH of groundwater.



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- 8) Explain:  $\text{CO}_2$  affect the value of pH of rain.
- 9) What is the importance of measuring pH of aquatic ecosystem.
- 10) Explain, Industries affect pH of ground water.
- 11) What are the ways to keep pH of natural water?
- 12) What is the relation between pH and algae growth?