

## PREVIOUS YEAR QUESTIONS (Chapter wise)

### CHAPTER NAME: ACIDS, BASES AND SALTS

#### SUMMARY POINTS

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| Q.NO.: 1 | Choose the correct answer to the question from the given options.<br>The metal hydroxide which reacts with both acids and alkalis to form salt and water is:<br>a. Calcium hydroxide<br>b. Magnesium hydroxide<br>c. Aluminium hydroxide<br>d. Ferric hydroxide | YEAR<br>[2024]            |
| ANS.:    | (C) Aluminium hydroxide                                                                                                                                                                                                                                         |                           |
| TOPIC:   | Page No.:                                                                                                                                                                                                                                                       | <a href="#">Ref. Link</a> |

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| Q.NO.: 2 | Complete the following sentence by choosing the correct answer from the bracket:<br>The salt that can be prepared by Direct Combination is _____. [FeCl <sub>3</sub> /FeCl <sub>2</sub> ] | YEAR<br>[2024]            |
| ANS.:    | Ferric chloride                                                                                                                                                                           |                           |
| TOPIC:   | Page No.:                                                                                                                                                                                 | <a href="#">Ref. Link</a> |

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| Q.NO.: 3 | Mohan has three solutions P, Q and R having a pH of 13, 5 and 2 respectively. Which of the above solutions P, Q or R:<br>a. will react with Magnesium to liberate hydrogen gas?<br>b. will liberate ammonia gas when it reacts with ammonium chloride?<br>c. will contain molecules as well as ions? | YEAR<br>[2024] |
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| <b>ANS.:</b>  | (A) Q<br>(B) P<br>(C) Q |                           |
| <b>TOPIC:</b> | <b>Page No.:</b>        | <a href="#">Ref. Link</a> |

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|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Q.NO.: 4</b> | <b>Define the following terms: Normal Salt</b>                                                                                                                                  | <b>YEAR</b><br><b>[2024]</b> |
| <b>ANS.:</b>    | The salt formed by the complete replacement of the ionizable hydrogen atoms of an acid by a metallic or an ammonium ion (which is present in alkali). Example: Sodium chloride. |                              |
| <b>TOPIC:</b>   | <b>Page No.:</b>                                                                                                                                                                | <a href="#">Ref. Link</a>    |

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| <b>Q.NO.: 5</b> | <b>Identify the gas evolved in the following reaction:<br/>a. Copper carbonate is heated.</b> | <b>YEAR</b><br><b>[2024]</b> |
| <b>ANS.:</b>    | Carbon dioxide                                                                                |                              |
| <b>TOPIC:</b>   | <b>Page No.:</b>                                                                              | <a href="#">Ref. Link</a>    |

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|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Q.NO.: 6</b> | <b>Arrange the following as per the instructions given in the brackets:<br/>a. Sulphuric acid, Phosphoric acid, Acetic acid (increasing order of number of replaceable H atoms per molecule)</b> | <b>YEAR</b><br><b>[2024]</b> |
| <b>ANS.:</b>    | Acetic acid, Sulphuric acid, Phosphoric acid                                                                                                                                                     |                              |
| <b>TOPIC:</b>   | <b>Page No.:</b>                                                                                                                                                                                 | <a href="#">Ref. Link</a>    |

| Q.NO.: 7                                          | <p>7. Match the salts underlined in column A with the most suitable method of preparation given in column B.</p> <table><thead><tr><th>Column A</th><th>Column B</th></tr></thead><tbody><tr><td>a. <u>ZnCl<sub>2</sub></u> from Zn</td><td>1. Precipitation</td></tr><tr><td>b. <u>KNO<sub>3</sub></u> from KOH</td><td>2. Direct combination</td></tr><tr><td>c. <u>CaCO<sub>3</sub></u> from CaCl<sub>2</sub></td><td>3. Displacement reaction</td></tr><tr><td></td><td>4. Neutralization</td></tr></tbody></table> | Column A                  | Column B | a. <u>ZnCl<sub>2</sub></u> from Zn | 1. Precipitation | b. <u>KNO<sub>3</sub></u> from KOH | 2. Direct combination | c. <u>CaCO<sub>3</sub></u> from CaCl <sub>2</sub> | 3. Displacement reaction |  | 4. Neutralization | YEAR<br>[2024] |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|------------------------------------|------------------|------------------------------------|-----------------------|---------------------------------------------------|--------------------------|--|-------------------|----------------|
| Column A                                          | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
| a. <u>ZnCl<sub>2</sub></u> from Zn                | 1. Precipitation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
| b. <u>KNO<sub>3</sub></u> from KOH                | 2. Direct combination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
| c. <u>CaCO<sub>3</sub></u> from CaCl <sub>2</sub> | 3. Displacement reaction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
|                                                   | 4. Neutralization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
| ANS.:                                             | Zinc chloride - Direct combination<br>Potassium nitrate - Neutralization<br>Calcium Carbonate - Precipitation                                                                                                                                                                                                                                                                                                                                                                                                           |                           |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |
| TOPIC:                                            | Page No.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <a href="#">Ref. Link</a> |          |                                    |                  |                                    |                       |                                                   |                          |  |                   |                |

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| <b>Q.NO.: 8</b> | <p>The acid which does not form acid salt by a basic radical:</p> <p>a. Hydrochloric acid<br/>b. Carbonic acid<br/>c. Sulphuric acid<br/>d. Nitric acid</p> | <b>YEAR</b><br>[2023]     |
| <b>ANS.:</b>    | (B) Carbonic acid                                                                                                                                           |                           |
| <b>TOPIC:</b>   | <b>Page No.:</b>                                                                                                                                            | <a href="#">Ref. Link</a> |

|                 |                                                                                                                                                                         |                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Q.NO.: 9</b> | <p>Select the acid which contains four hydrogen atoms in it but is dibasic:</p> <p>(A) Acetic acid<br/>(B) Sulphuric acid<br/>(C) Nitric acid<br/>(D) Tartaric acid</p> | <b>YEAR</b><br>[2023]     |
| <b>ANS.:</b>    | (D) Tartaric acid                                                                                                                                                       |                           |
| <b>TOPIC:</b>   | <b>Page No.:</b>                                                                                                                                                        | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 10</b> | <p>State one relevant observation for each of the following reactions:</p> <p>(A) Zinc carbonate is heated strongly.</p> | <b>YEAR</b> |
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|        | (B) Excess ammonium hydroxide solution is added to lead nitrate solution.                                                                                                  | [2020]                    |
| ANS.:  | (A) A residue which is yellow when hot and white when cold is formed.<br>(B) A chalky white ppt of lead hydroxide which is insoluble in excess of $\text{NH}_4\text{OH}$ . |                           |
| TOPIC: | Page No.:                                                                                                                                                                  | <a href="#">Ref. Link</a> |

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| Q.NO.: 11 | Fill in the blanks with the choices given in brackets:<br>(A) A salt prepared by the displacement reaction is _____ (ferric chloride/ferrous chloride).<br>(B) An alkali which completely dissociates into ions is _____ (ammonium hydroxide, calcium hydroxide, lithium hydroxide). | YEAR<br>[2020]            |
| ANS.:     | (A) Ferrous chloride<br>(B) Lithium hydroxide                                                                                                                                                                                                                                        |                           |
| TOPIC:    | Page No.:                                                                                                                                                                                                                                                                            | <a href="#">Ref. Link</a> |

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| Q.NO.: 12 | Complete the following by selecting the correct options from the choices given:<br>(A) pH of acetic acid is greater than dilute sulphuric acid. So acetic acid contains _____ concentration of $\text{H}^+$ ions. (greater/lower).<br>(B) An aqueous solution of _____ is acidic in nature. ( $\text{KCl}$ / $\text{MgCl}_2$ / $\text{NH}_4\text{Cl}$ / $\text{CH}_3\text{COONa}$ ). | YEAR<br>[2020]            |
| ANS.:     | (A) Lower<br>(B) $\text{NH}_4\text{Cl}$                                                                                                                                                                                                                                                                                                                                              |                           |
| TOPIC:    | Page No.:                                                                                                                                                                                                                                                                                                                                                                            | <a href="#">Ref. Link</a> |

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| Q.NO.: 13 | State one relevant observation for the following: Lead nitrate solution is treated with sodium hydroxide solution drop-wise till it is in excess. | YEAR<br>[2019]            |
| ANS.:     | A white ppt of lead hydroxide is obtained which dissolves in excess of $\text{NaOH}$ to give a clear solution.                                    |                           |
| TOPIC:    | Page No.:                                                                                                                                         | <a href="#">Ref. Link</a> |

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|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Q.NO.: 14 | Write balanced chemical equations for each of the following:<br>(A) Action of warm water on magnesium nitride.<br>(B) Action of concentrated nitric acid on Sulphur. | YEAR<br>[2019] |
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| <b>ANS.:</b>  | (A) $\text{Mg}_3\text{N}_2 + 6\text{H}_2\text{O} \rightarrow 3\text{Mg}(\text{OH})_2 + 2\text{NH}_3$<br>(B) $\text{S} + 6\text{HNO}_3 \rightarrow \text{H}_2\text{SO}_4 + 6\text{NO}_2 + 2\text{H}_2\text{O}$ |                           |
| <b>TOPIC:</b> | <b>Page No.:</b>                                                                                                                                                                                              | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 15</b> | Match the following salts given in Column A with their methods of preparation given in Column B:<br><b>Column A:</b> Zinc chloride, Lead Sulphate, Sodium nitrate, Iron (III) Chloride<br><b>Column B:</b> Simple displacement, Neutralization, Decomposition, Combination | <b>YEAR</b><br><b>[2019]</b> |
| <b>ANS.:</b>     | <b>Zinc chloride - Combination</b><br><b>Lead Sulphate - Precipitation</b><br><b>Sodium nitrate - Neutralization</b><br><b>Iron (III) Chloride - Simple Displacement</b>                                                                                                   |                              |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                                                                           | <a href="#">Ref. Link</a>    |

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| <b>Q.NO.: 16</b> | State one relevant observation for each of the following:<br><b>(A)</b> Anhydrous calcium chloride is exposed to air for some time.<br><b>(B)</b> Barium chloride solution is slowly added to sodium sulphate solution.                                     | <b>YEAR</b><br><b>[2018]</b> |
| <b>ANS.:</b>     | <b>(A)</b> It absorbs moisture from the atmosphere and dissolves. This property is known as deliquescence, and its white color also changes to colorless.<br><b>(B)</b> A white precipitate of barium sulfate is obtained which is insoluble in dilute HCl. |                              |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                                                            | <a href="#">Ref. Link</a>    |

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| <b>Q.NO.: 17</b> | Fill in the blank with the correct choice given in the bracket:<br><b>(A)</b> The salt prepared by the method of direct combination is _____ (iron (II) chloride/iron (III) chloride).<br><b>(B)</b> Three solutions P, Q, and R have pH values of 3.5, 5.2, and 12.2 respectively. Which one of these is:<br>■ A weak acid.<br>■ A strong alkali | <b>YEAR</b><br><b>[2018]</b> |
| <b>ANS.:</b>     | <b>(A)</b> Iron (III) chloride<br><b>(B)</b> ■ Weak acid: Q<br>■ Strong alkali: R                                                                                                                                                                                                                                                                 |                              |

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|---------------|------------------|---------------------------|
| <b>TOPIC:</b> | <b>Page No.:</b> | <a href="#">Ref. Link</a> |
|---------------|------------------|---------------------------|

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| <b>Q.NO.: 18</b> | Give a chemical test to distinguish between the following pair of chemicals: Sodium chloride solution and sodium nitrate solution.                     | <b>YEAR</b><br>[2018]     |
| <b>ANS.:</b>     | To both solutions add silver nitrate solution. Sodium chloride gives a white curdy precipitate of silver chloride while sodium nitrate does not react. |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                       | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 19</b> | Write a balanced chemical equation for the preparation of each of the following salts:<br>(A) Copper Sulphate from copper carbonate<br>(B) Zinc carbonate from zinc sulphate                                        | <b>YEAR</b><br>[2018]     |
| <b>ANS.:</b>     | (A) $\text{CuCO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2\text{O} + \text{CO}_2$<br>(B) $\text{ZnSO}_4 + (\text{NH}_4)_2\text{CO}_3 \rightarrow (\text{NH}_4)_2\text{SO}_4 + \text{ZnCO}_3$ |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                    | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 20</b> | Fill in the blanks from the choices given in the brackets:<br>(A) When a metallic oxide is dissolved in water, the solution formed has a high concentration of _____ ions. ( $\text{H}^+$ / $\text{OH}^-$ )<br>(B) Potassium sulphite on reacting with hydrochloric acid releases _____ gas. ( $\text{Cl}_2$ , $\text{SO}_2$ , $\text{H}_2\text{S}$ ) | <b>YEAR</b><br>[2017]     |
| <b>ANS.:</b>     | (A) $\text{OH}^-$<br>(B) $\text{SO}_2$                                                                                                                                                                                                                                                                                                                |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                                                                                                                                                      | <a href="#">Ref. Link</a> |

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|------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Q.NO.: 21</b> | To increase the pH value of a neutral solution, we should add:<br>(A) An acid<br>(B) An acid salt<br>(C) An alkali<br>(D) A salt | <b>YEAR</b><br>[2017] |
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| <b>ANS.:</b>  | (C) An alkali    |                           |
| <b>TOPIC:</b> | <b>Page No.:</b> | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 22</b> | Anhydrous iron (III) chloride is prepared by:<br>(A) Direct Combination<br>(B) Simple displacement<br>(C) Decomposition<br>(D) Neutralization | <b>YEAR</b><br>[2017]     |
| <b>ANS.:</b>     | (A) Direct combination                                                                                                                        |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                              | <a href="#">Ref. Link</a> |

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|------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Q.NO.: 23</b> | State one relevant observation for each of the following reactions: Action of concentrated sulphuric acid on hydrated copper sulphate. | <b>YEAR</b><br>[2017]     |
| <b>ANS.:</b>     | The blue coloured hydrated copper sulphate changes to white anhydrous copper sulphate as the water of crystallization is removed.      |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                       | <a href="#">Ref. Link</a> |

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|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Q.NO.: 24</b> | Write balanced chemical equations for the preparation of each of the following salts:<br>(A) Copper carbonate<br>(B) Ammonium sulphate crystals.                                                                    | <b>YEAR</b><br>[2017]     |
| <b>ANS.:</b>     | (A) $\text{CuSO}_4 + \text{Na}_2\text{CO}_3 \rightarrow \text{Na}_2\text{SO}_4 + \text{CuCO}_3$<br>(B) $2\text{NH}_4\text{OH} + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4 + 2\text{H}_2\text{O}$ |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                    | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 25</b> | Fill in the blanks from the choices given in the bracket:<br>Higher the pH value of a solution, the more _____ (acidic/alkaline) it is. | <b>YEAR</b><br>[2016]     |
| <b>ANS.:</b>     | alkaline                                                                                                                                |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                        | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 26</b> | State one observation when barium chloride solution is mixed with sodium sulphate solution.                   | <b>YEAR</b><br>[2016]     |
| <b>ANS.:</b>     | A white coloured precipitate of barium sulphate is formed when sodium sulphate is mixed with barium chloride. |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                              | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 27</b> | Match the following:<br><b>Column A:</b> Lead nitrate, Magnesium Chloride, Ferric Chloride, Sodium Nitrate, Zinc Carbonate<br><b>Column B:</b> Combination, Simple displacement, Precipitation, Neutralization | <b>YEAR</b><br>[2016]     |
| <b>ANS.:</b>     | Lead nitrate - Neutralization<br>Magnesium Chloride - Simple displacement<br>Ferric Chloride - Combination<br>Sodium Nitrate - Neutralization<br>Zinc Carbonate - Precipitation                                |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                               | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 28</b> | State what would you observe when:<br><b>(A)</b> Washing soda crystals are exposed to the atmosphere.<br><b>(B)</b> The salt ferric chloride is exposed to the atmosphere.                                                                    | <b>YEAR</b><br>[2016]     |
| <b>ANS.:</b>     | (A) When crystals of washing soda are exposed to air, it loses its water of crystallization due to efflorescence.<br>(B) When ferric chloride is exposed to the atmosphere it absorbs moisture from the atmospheric air. So it becomes moist. |                           |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                                              | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 29</b> | From the following list of oxides choose the oxide that fits the description. Each answer may be used only once.<br><br>Sodium oxide<br>Sulphur dioxide<br>Aluminium oxide<br>Silicon dioxide<br><b>(A)</b> Basic oxide<br><b>(B)</b> An oxide which dissolves in water forming an acid<br><b>(C)</b> An amphoteric oxide | <b>YEAR</b><br>[2016] |
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|               | (D) A covalent oxide of a metalloid                                                                     |                           |
| <b>ANS.:</b>  | (A) Sodium oxide / Magnesium oxide<br>(B) Sulphur dioxide<br>(C) Aluminium oxide<br>(D) Silicon dioxide |                           |
| <b>TOPIC:</b> | <b>Page No.:</b>                                                                                        | <a href="#">Ref. Link</a> |

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| <b>Q.NO.: 30</b> | From the list of following salts, choose the salt that most appropriately fits the description given in the brackets.<br><br>MgSO <sub>4</sub> , AgCl, ZnCO <sub>3</sub> , Ca(NO <sub>3</sub> ) <sub>2</sub><br><b>(A) The salt which on heating gives a residue which is yellow when hot and white when cold is ZnCO<sub>3</sub>.</b> | <b>YEAR</b><br><b>[2016]</b> |
| <b>ANS.:</b>     | When zinc carbonate is heated strongly, it forms zinc oxide and carbon dioxide. Zinc oxide is a yellow powder when hot and white when cold.                                                                                                                                                                                            |                              |
| <b>TOPIC:</b>    | <b>Page No.:</b>                                                                                                                                                                                                                                                                                                                       | <a href="#">Ref. Link</a>    |

**Students Point**  
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