Acids and Bases

Question 1 (2016 - Question 4 - Part e)

(e) WRITE: (i) H_3PO_4 //

(ii) HPO_4^{2-} (2×3)

Question 2 (2013 - Section B - Question 11 - Part (b))

(2×3)

(b) DEFINE: (i) *Arrhenius*: dissociates to produce **hydroxyl (hydroxide) ions (OH^-)** **in aqueous solution (water)** //

(ii) *Brønsted-Lowry*: **proton (hydrogen ion, H^+) acceptor** $(4 + 3)$

GIVE: (i) $H_2PO_4^-$ // (ii) PO_4^{3-} (2×3)

Question 3 (2009 - Section B - Question 4 - Part (e))

(e) DEFINE: acid & base **differing by proton (H^+)** / acid **donating (losing) proton (H^+)** to form conjugate base / base **accepting (gaining) proton (H^+)** to form conjugate acid   (6)

Question 4 (2010 - Section B - Question 8)

(a) DEFINE: (i): **Proton (H^+) donor** //

(ii): **Related (produced) by gain of one proton (H^+) / base + H^+** (2×4)

DISTINGUISH: Strong acid **dissociates** almost **fully (readily)** in aqueous **solution (water)** / **good proton donor** //
weak acid **only slightly dissociates in solution / poor proton donor** (2×3)

WHAT: X^- (3)
["SA diss fully" *and* "WA diss. slightly" (3); if "in solution (water)" mentioned once, give other (3).

Question 5 (2006 - Section B - Question 4 - Part (e))

(e) (i) H_3O^+ (3)
(ii) OH^- (3)

Question 6 (2005 - Section B - Question 8 - Part (a) - (c))

QUESTION 8

(a) DEFINE: (i) *acid*: **proton (hydrogen ion, H^+) donor**   (4)
(ii) *base*: **proton (hydrogen ion, H^+) acceptor**   (4)

(b) IDENTIFY: **acid** (3)   **its conjugate base**   (3)

| acid = H_2F^+ | (3) | its conjugate base = HF | (3) |
| acid = HCl | (3) | its conjugate base = Cl^- | (3) |

[If not specified as acid and conjugate base, take the order in the question to be the intended order. Accept if indicated correctly on the equation.]

(a)   (i)   **proton donor / donor of hydrogen ions (H$^+$)**   (4)

  (ii)   **proton acceptor / acceptor of hydrogen ions (H$^+$)**   (4)

Identify: **H$_2$S**   (3)   **OH$^-$**   (3)   *Note: both are acids; both are also conjugate acids.*
Therefore, the order does not matter.