

Chapter 1, Part 1**Learning objectives:**

- a) Understand and use the terms conjugate acid and conjugate base
- b) Define conjugate acid–base pairs, identifying such pairs in reactions

Questions in this Part (identified by  logo) have been reproduced from the General Education Diploma Chemistry Examination for Private Bilingual Schools, Ministry of Education, Sultanate of Oman.

Part 1**Q1.**

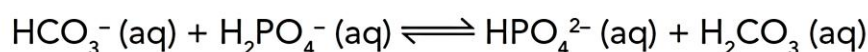
Define the following term :

Conjugate acid-base pair.

[1]

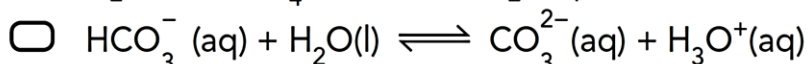
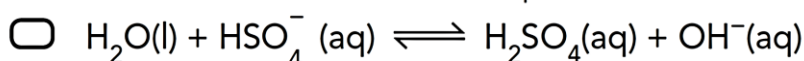
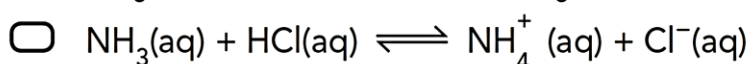
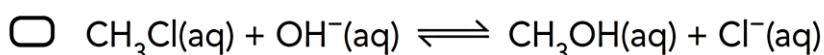
Oman General Education Diploma Chemistry Examination, 2024/25, Semester one, 1st session**Part 1****Q2.**

Consider the following reaction and statements for the forward reaction:



- I. HCO_3^- is an acid and H_2CO_3 its conjugate base.
- II. HCO_3^- is a base and H_2CO_3 its conjugate acid.
- III. H_2PO_4^- is an acid and HPO_4^{2-} its conjugate base.
- IV. H_2PO_4^- is a base and HPO_4^{2-} its conjugate acid

Which statements are correct?

☐ I and III☐ I and IV☐ II and III☐ II and IVOman General Education Diploma Chemistry Examination, 2024/25, Semester one, 1st session**Part 1****Q3.**Which of the following is not a reaction of a Brønsted - Lowry acid and base?Oman General Education Diploma Chemistry Examination, 2024/25, Semester one, 2nd session

Part 1**Q4.****a. For equilibrium No.1:****(1 mark)**The hydrogencarbonate ion (HCO_3^-) is a conjugate base:**(i)** Define the term conjugate base.

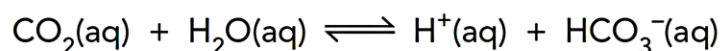
b. For equilibrium No.2:**(1 mark)****(i)** What are the acid and its conjugate base for the forward reaction?

The acid: _____

Its conjugate base: _____

Oman General Education Diploma Chemistry Examination, 2024/25, Semester one, 2nd session**Part 1****Q5.**

Carbon dioxide combines with water in the blood to form a solution containing hydrogen ions. The equilibrium between carbon dioxide and hydrogen carbonate is the most important buffering system in the blood.



a. Identify the conjugate acid and the conjugate base on the right-hand side in the equilibrium equation given above. **(2 marks)**

Conjugate acid: _____

Conjugate base: _____

Oman General Education Diploma Chemistry Examination, 2023/24, Semester one, 2nd session