

8.1 Theories & Reactions of Acids & Bases

Question Paper

Course	DPIB Chemistry
Section	8. Acids & Bases
Topic	8.1 Theories & Reactions of Acids & Bases
Difficulty	Medium

Time allowed: 20
Score: /10
Percentage: /100

Question 1

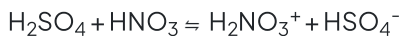
The typical reactions of dilute acids include them being able to react with

- I. NaHCO_3
 - II. Mg
 - III. Cu
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

[1 mark]

Question 2

The following reaction occurs between concentrated sulfuric and nitric acids.



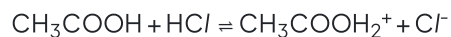
Identify the two species which are acting as Brønsted–Lowry bases.

- A. H_2NO_3^+ and HSO_4^-
- B. HNO_3 and H_2NO_3^+
- C. H_2SO_4 and HSO_4^-
- D. HNO_3 and HSO_4^-

[1 mark]

Question 3

What role does each species play in the equilibrium below according to Brønsted–Lowry theory?



	CH_3COOH	HCl	$\text{CH}_3\text{COOH}_2^+$	Cl^-
A	acid	base	base	acid
B	acid	base	acid	base
C	base	acid	base	acid
D	base	acid	acid	base

[1 mark]

Question 4

Perbromic acid, HBrO_4 , is an example of a strong acid when dissolved in water. What is true about perbromic acid?

- A. HBrO_4 is largely found as molecules in the solution
- B. HBrO_4 solution reacts only with strong bases
- C. HBrO_4 is fully dissociated in solution
- D. HBrO_4 has a pH greater than 7

[1 mark]

Question 5

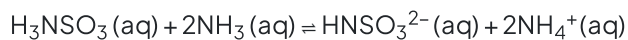
Potassium hydrogenphosphate has the formula K_2HPO_4 . What is the conjugate base of this compound?

- A. H_2PO_4^-
- B. KHPO_4^{2-}
- C. PO_4^{3-}
- D. KH_2PO_4

[1 mark]

Question 6

For the equilibrium equation shown, which species are Brønsted-Lowry acids?



- A. NH_4^+ and NH_3
- B. NH_4^+ and HNSO_3^{2-}
- C. H_3NSO_3 and HNSO_3^{2-}
- D. H_3NSO_3 and NH_4^+

[1 mark]

Question 7

Which would be formed when calcium oxide reacts with hydrochloric acid?

- A. Calcium chloride and carbon dioxide
- B. Calcium chloride, hydrogen gas and water
- C. Calcium, hydrogen gas and water
- D. Calcium chloride and water

[1 mark]

Question 8

What is the sum of the coefficients when the following acid-base equation is balanced?



- A. 5
- B. 6
- C. 7
- D. 8

[1 mark]

Question 9

Which oxides react with calcium oxide?

- I. SO_2
 - II. NO_2
 - III. K_2O
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

[1 mark]

Question 10

Which row correctly describes the reaction specified?

	Reaction	Energy change
A	metal displacement	endothermic
B	neutralisation	exothermic
C	combustion	endothermic
D	melting ice	exothermic

[1 mark]