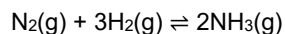


How Far (MCQ)

1. The reversible reaction of nitrogen and hydrogen to form ammonia is shown below.



In the equilibrium mixture, the partial pressure of N_2 is 18.75 MPa and the partial pressure of H_2 is 2.50 MPa.

The total pressure is 25 MPa.

What is the value of K_p , in MPa^{-2} ?

- A 1.2×10^{-4}
- B 0.048
- C 0.075
- D 21

Your answer

[1]

2. Which statement(s) is/are correct when a catalyst is added to a system in dynamic equilibrium?

- 1 The rates of the forward and reverse reactions increase by the same amount.
- 2 The concentrations of the reactants and products do not change.
- 3 The value of K_c increases

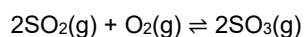
- A 1, 2 and 3
- B Only 1 and 2
- C Only 2 and 3
- D Only 1

Your answer

[1]

5.1.2 How Far MCQ

3. The reversible reaction of sulfur dioxide and oxygen to form sulfur trioxide is shown below.



An equilibrium mixture contains 2.4 mol SO_2 , 1.2 mol O_2 and 0.4 mol SO_3 .
The total pressure is 250 atm.

What is the partial pressure of SO_3 ?

- A 15 atm
- B 25 atm
- C 100 atm
- D 200 atm

Your answer

[1]

4. A mixture of N_2 and O_2 gases has a total pressure of 1.42 atm.
The mole fraction of N_2 is 0.700.

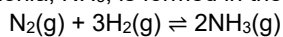
What is the partial pressure, in atm, of O_2 in the mixture?

- A 0.211
- B 0.426
- C 0.493
- D 0.994

Your answer

[1]

5. Ammonia, NH_3 , is formed in the reversible reaction below.



A mixture at equilibrium contains 0.320 mol N_2 , 0.960 mol H_2 and 0.120 mol NH_3 .

What is the mole fraction of H_2 in the equilibrium mixture?

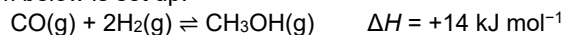
- A 0.279
- B 0.686
- C 0.837
- D 2.06

Your answer

[1]

5.1.2 How Far MCQ

6. The equilibrium system below is set up.



The equilibrium system is compressed at constant temperature.

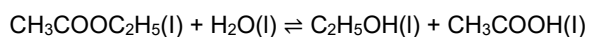
What is the effect on the value of K_c and the amount, in moles, of CH_3OH ?

	K_c	Amount in moles of CH_3OH
A	increases	increases
B	decreases	decreases
C	no change	no change
D	no change	increases

Your answer

[1]

7. Two students set up the equilibrium system below.



The students titrated samples of the equilibrium mixture with sodium hydroxide, NaOH(aq) , to determine the concentration of CH_3COOH .

The students used their results to calculate a value for K_c .

The students' values for K_c were different.

Which of the reason(s) below could explain why the calculated values for K_c were different?

- 1: Each student carried out their experiment at a different temperature.
- 2: Each student used a different concentration of NaOH(aq) in their titration.
- 3: Each student titrated a different volume of the equilibrium mixture.

- A. 1, 2 and 3
- B. Only 1 and 2
- C. Only 2 and 3
- D. Only 1

Your answer

[1]

5.1.2 How Far MCQ

8. NO(g), H₂(g), N₂(g) and H₂O(g) exist in equilibrium:
$$2\text{NO}(\text{g}) + 2\text{H}_2(\text{g}) \rightleftharpoons \text{N}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$$

At room temperature and pressure, the equilibrium lies well to the right-hand side.

Which of the following could be the equilibrium constant for this equilibrium?

- A. $1.54 \times 10^{-3} \text{ mol dm}^{-3}$
- B. $6.50 \times 10^2 \text{ mol dm}^{-3}$
- C. $1.54 \times 10^{-3} \text{ dm}^3 \text{ mol}^{-1}$
- D. $6.50 \times 10^2 \text{ dm}^3 \text{ mol}^{-1}$

Your answer

[1]

END OF QUESTION PAPER

Mark scheme – How Far (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			B	1 (AO 2.6)	
			Total	1	
2			B	1 (AO 1.1)	
			Total	1	
3			B	1 (AO 1.3)	Examiner's Comments This was a very successful multiple choice question for nearly all candidates.
			Total	1	
4			B	1	ALLOW 0.426 in the box
			Total	1	
5			B	1	
			Total	1	
6			D	1	
			Total	1	
7			D	1	
			Total	1	
8			D	1	
			Total	1	