

Jeddah University

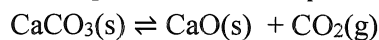
CHEMISTRY (110)

Test Bank (II)

Chapters 5-6

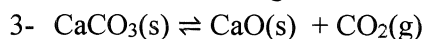
Assignments 1

1- The expression for the equilibrium constant (K_c) for the chemical equation:



(a) $K_c = [\text{CaO}][\text{CaO}]$ (b) $K_c = [\text{CO}_2]$ (c) $K_c = [\text{CaO}][\text{CaO}]/[\text{CaCO}_3]$ (d) $K_c = [\text{CaCO}_3]$

2- Consider the following reaction at equilibrium.



Adding additional CO_2 will shift the reaction mixture towards:

(a) The reactants (b) products (c) both reactants and products (d) non

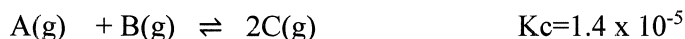
3- Hydrofluoric acid is:

(a) Strong acid (b) strong base (c) weak acid (d) weak base

4- The $[\text{H}_3\text{O}^+]$ in a solution is 1.8×10^{-4} , this solution is:

(a) Acidic (b) basic (c) neutral (d) amphoteric

5- When the following reaction reaches to equilibrium:



The concentration of the productsthe concentration of reactants

(a) is greater than (b) is lower than (c) equal (d) non

6- Acetic acid is a weaker acid than sulphuric acid because:

- (a) it has low molecular weight.
- (b) sulphuric acid is weakly ionised.
- (c) it does not dissociates completely.

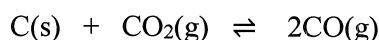
7- Consider the reaction at equilibrium:



Addition of KCl to the reaction mixture will:

- (a) shift the reaction left
- (b) shift the reaction right
- (c) remain the reaction unchanged

8- This reaction is endothermic



Assignments 1

Increasing the reaction temperature will:

- (a) shift the reaction left
- (b) shift the reaction right
- (c) remain the reaction unchanged

9- The pH of solution prepared from 4 g NaOH and water to make 1L of solution is:

- (a) 5
- (b) 8
- (c) 9
- (d) 13

10- For the reaction $\text{Ni(s)} + 4\text{CO(g)} \rightleftharpoons \text{Ni(CO)}_4$ $K_c = 5.0 \times 10^4$ at 25 °C

K_c for the reaction $\text{Ni(CO)}_4 \rightleftharpoons \text{Ni(s)} + 4\text{CO(g)}$ will be:

- (a) 2.0×10^5
- (b) 5.0×10^4
- (c) 5.0×10^{-5}
- (d) 2.0×10^{-3}

11- If a balloon is inflated from a volume of 0.1 L to 1.85 L against an external pressure of 1.0 atm, the work done is:

- (a) 1.75 L.atm
- (b) -1.75 L.atm
- (c) 1.75 J
- (d) -1.75 J

12- A bomb calorimeter is used to measure the changes in internal energy for

- (a) Combustion reactions
- (b) neutralization reactions
- (c) redox reactions
- (d) precipitation reactions

13- The enthalpy (H) is defined as the sum of its internal energy and its.....

- (a) Volume
- (b) Pressure
- (c) concentration
- (d) product of volume and pressure

14- The value of enthalpy change (ΔH) is positive for....

- (a) Exothermic reaction
- (b) endothermic reaction
- (c) reversible reaction
- (d) Irreversible reaction

15- Constant pressure calorimeter measures

- (a) enthalpy change
- (b) heat of combustion
- (c) internal energy
- (d) heat capacity

16- Thermodynamics is the general study of....

- (a) energy interconversions
- (b) reaction kinetics
- (c) chemical changes
- (d) physical changes

17- A system release 625 kJ of heat and dose 105 kJ of work on the surroundings, what is the change in the internal energy of the system?

- (a) -730 kJ
- (b) 730 kJ
- (c) 520 kJ
- (d) - 520 kJ

Assignments 1

18- The total energy of the universe is.....

- (a) Increasing (b) decreasing (c) constant (d) changeable

19- The quantity of heat required to change the system's temperature by 1 °C is the.....

- (a) molar heat capacity (b) heat capacity (c) internal energy (d) stranded enthalpy

20- The sum of the kinetic and potential energies of all particles that compose a system is known as....

- (a) enthalpy (b) work (c) internal energy (d) stat function

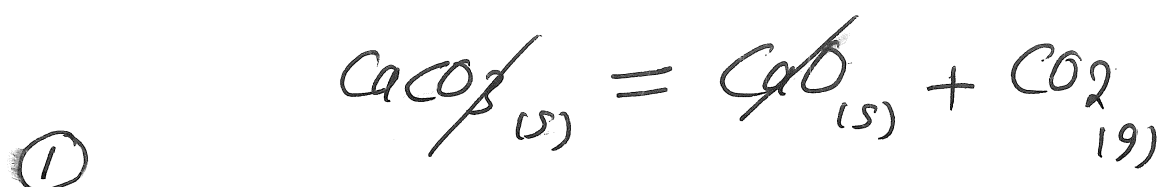
22- The burning of natural gas on a stove is an

- (a) exothermic process (b) endothermic process (d) chemical process (e) physical process

23- Water condensation from a steam is

- (a) exothermic process (b) endothermic process (d) chemical process (e) physical process

①



$$K_c = [\text{CO}_2] \quad \textcircled{b} \checkmark$$

②



① reactants (left)

إدخال كمية CO_2 ← الاتجاه المتكافئ

③

HF (hydrofluoric acid) -

② weak acid

④

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$= -\log[1.8 \times 10^{-4}]$$

$$\text{pH} = 3.74 \text{ * acidic (أقل من 7) } \quad \textcircled{d} \checkmark$$

① \checkmark

⑤

$$K_c = 1.4 \times 10^{-5} \rightarrow \quad \textcircled{L}$$

$K_c \ll 1$ (is lower than)

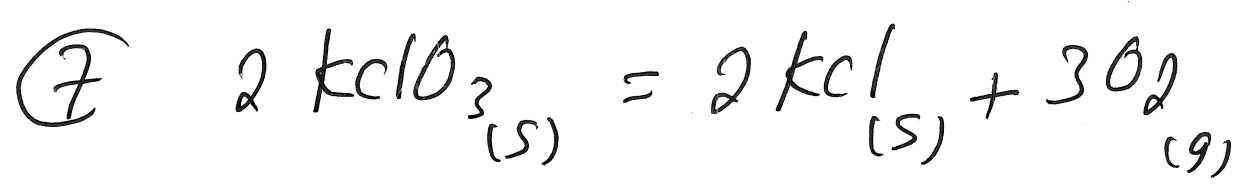
(2)

* $k_c = 1$ $[products] = [reactants]$

* $k_c > 1$ $[products] > [reactants]$

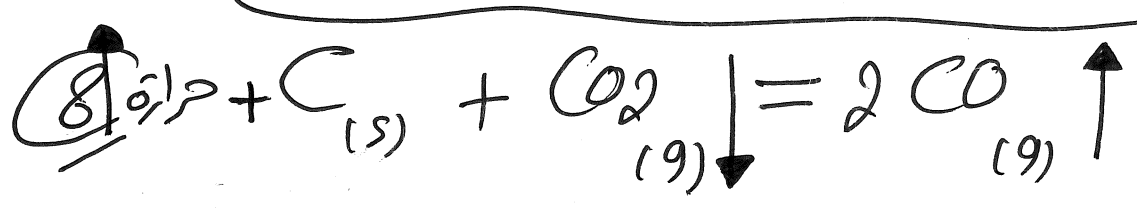
* $k_c < 1$ $[products] < [reactants]$

(6) (c) CH_3COOH
does not dissociates completely
يعني كليا / لا يتفك كليا



* $KCl_{(s)}$ مادة صلبة لا تتوثر

(c) remain the reaction unchanged



* (R) * k_c increase تزداد

(3)

(b) shift to Right

(a) $\text{moles} = \frac{\text{mass (g)}}{\text{molar mass}}$ NaOH

$$= \frac{4}{23+16+1} = 0.1 \text{ mole}$$

$$M = \frac{\text{moles}}{\text{Volume (L)}} = \frac{0.1}{1} = 0.1 \text{ M}$$

* NaOH strong base.

$$pOH = -\log[OH^-]$$

$$pOH = -\log[0.1] \quad pOH = 1$$

$$pH = 14 - 1 = 13 \quad (d) \checkmark$$

(10) المعادلة (c) مع الاتجاه المعاكس

$$K_2 = \frac{1}{K_1} \quad K_2 = \frac{1}{5 \times 10^4}$$

$$K_2 = 2 \times 10^{-5}$$

(a) \checkmark

(11)

$$W = -P\Delta V$$

$$W = -1 \times (1.85 - 0.1)$$

$$= -1.75 \text{ L}\cdot\text{atm} \quad (b) \checkmark$$

(12)

bomb calorimeter

(a) Combustion reaction
تفاعلات الاحتراق

(13)

$$\text{enthalpy} = E + PV$$

(d) product of volume and pressure

(14)

$$\Delta H = + \text{ (positive)}$$

(b) endothermic RX
التفاعلات الماصة للحرارة

(15)

constant pressure calorimeter measures

(a) \checkmark

(16)

(a) \checkmark

(5)

(17)

$$E = q + w$$

$$E = 625 + 105$$

$$E = 730 \text{ kJ}$$

(b) ✓

(18) Total energy of universe is constant

(c) ✓

(19)

(b) heat capacity

سعة الحرارة

(20)

* مجموع طاقتي الوضع والحركة

(c)

$$\text{internal } E = \text{طاقة الوضع} + \text{طاقة حركية}$$

(22)

burning \rightarrow Exothermic Rx

(a) ✓

(23)

(b) Endoth — condensation تكثف