

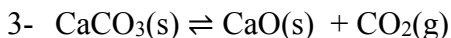
# Assignments 1

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  $\text{CO}_2$  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  $1.8 \times 10^{-4}$ , this solution is:

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

5- When the following reaction reaches to equilibrium:



The concentration of the products .....the 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.

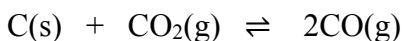
7- Consider the reaction at equilibrium:



Addition of  $\text{KCl}$  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)  $2.0 \times 10^5$
- (b)  $5.0 \times 10^4$
- (c)  $5.0 \times 10^{-5}$
- (d)  $2.0 \times 10^{-3}$

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 ( $\Delta H$ ) 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) standard 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) state 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