

Chemistry Model Question Paper - 9

Question 1 :

For alkali metals, which one of the following trends is INCORRECT?

(A) Ionization energy: $\text{Li} > \text{Na} > \text{K} > \text{Rb}$

(B) Hydration energy: $\text{Li} > \text{Na} > \text{K} > \text{Rb}$

(C) Atomic size: $\text{Li} < \text{Na} < \text{K} < \text{Rb}$

(D) Density: $\text{Li} < \text{Na} < \text{K} < \text{Rb}$

Answer: (D)

Question 2 : For one mole of an ideal gas, increasing the temperature from 10°C to 20°C _____.

(A) increases the rms velocity by $\sqrt{2}$ times.

(B) increases the average kinetic energy by two times.

(C) increases both the average kinetic energy and rms velocity, but not significantly.

(D) increases the rms velocity by two times.

Answer: (C)

Question 3 :

Ellingham diagram represents a graph of

(A) ΔG Vs T

(B) ΔG_0 Vs T

(C) ΔS Vs P

(D) DG Vs P

Answer: (B)

Question 4 :

For the four successive transition elements (Cr, Mn, Fe and Co), the stability of + 2 oxidation state will be there in which of the following order?

(A) Cr > Mn > Co > Fe

(B) Mn > Fe > Cr > Co

(C) Fe > Mn > Co > Cr

(D) Co > Mn > Fe > Cr

(At. nos. Cr = 24, Mn = 25, Fe = 26, Co = 27)

Answer: (B)

Question 5 : For the reaction $2\text{HI}(\text{g}) \rightleftharpoons \text{H}_2(\text{g}) + \text{I}_2(\text{g}) - Q \text{ KJ}$, the equilibrium constant depends upon

(A) temperature

(B) pressure

(C) catalyst

(D) volume

Answer: (A)

Question 6 :

For the reaction $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ the volume of carbon monoxide required to reduce one mole of ferric oxide is

(A) 22.4 dm³

(B) 44.8 dm³

(C) 67.2 dm³

(D) 11.2 dm³

Answer: (C)

Question 7 :

For the reaction $\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{H}_2\text{O}(\text{g})$ at 373 K and one atmospheric pressure

(A) $\Delta H = T\Delta S$

(B) $\Delta H = \Delta E$

(C) $\Delta H = 0$

(D) $\Delta E = 0$

Answer: (A)

Question 8 :

For the reaction $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g})$, the equilibrium constant is K_1 .
The equilibrium constant is K_2 for the reaction $2\text{NO}(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$.

What is K for the reaction $\text{NO}_2(\text{g}) \rightleftharpoons \frac{1}{2} \text{N}_2(\text{g}) + \text{O}_2(\text{g})$?

(A) $\frac{1}{(K_1 K_2)}$

(B) $\frac{1}{(2K_1 K_2)}$

(C) $\frac{1}{(4K_1 K_2)}$

(D) $\left[\frac{1}{K_1 K_2} \right]^{1/2}$

Answer: (D)

Question 9 :

For the reversible reaction



Which one of the following statements is true?

- (A) Equilibrium constant is greater than one.
- (B) The entropy change is negative.
- (C) The reaction is thermodynamically not feasible.
- (D) The reaction should be instantaneous.

Answer: (A)

Question 10 :

Formation of coloured solution is possible when metal ion in the compound contains

- (A) paired electrons
- (B) unpaired electrons
- (C) lone pair of electrons

(D) none of these

Answer: (B)