Chemistry Model Question Paper - 7

Question 1 :

Consider the following gaseous equilibria with equilibrium constants K1 and K2 respectively.

$$SO2(g) + \frac{1}{2}O_{2(g)} \rightleftharpoons SO3(g)$$

$$2SO3(g) \rightleftharpoons 2SO2(g) + O2(g)$$

The equilibrium constants are related as _____.

(A) $2K1 = K_2^2$

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

(C) $K_2^2 = \frac{1}{K_1}$

(D) $K_2 = \frac{2}{K_1^2}$

Answer: (C)

Question 2 :

Considering the reaction $C(S) + O_2(g) \rightarrow CO_2(g) + 393.5$ kJ the signs of ΔH, ΔS and ΔG respectively are

(A) –, +, –

(B) –, –, –

(C) –, +, +

(D) +, –, –

Answer: (C)

Question 3 :

Considering the state of hybridization of carbon atoms, find out the molecule among the following which is linear?

(A) $CH_3 - CH_2 - CH_2 - CH_3$

(B) $CH_3 - CH = CH - CH_3$

(C) $CH_3 - C \equiv C - CH_3$

(D) $CH_2 = CH - CH_2 - C \equiv CH$

Answer: (A)

Question 4 :

Cooking is fast in a pressure cooker, because

(A) food is cooked at constant volume.

(B) loss of heat due to radiation is minimum.

(C) food particles are effectively smashed.

(D) water boils at higher temperature inside the pressure cooker.

Answer: (A)

Question 5 : Dalda is prepared from oils by

(A) oxidation

(B) reduction

(C) hydrolysis

(D) distillation

Answer: (B)

Question 6 : Dalton's law of partial pressures is applicable to which one of the following systems?

(A) $CO + H_2$

(B) $H_2 + Cl_2$

(C) $NO + O_2$

(D) $NH_3 + HCl$

Answer: (B)

Question 7 :

Decomposition of benzene diozonium chloride by using Cu_2Cl_2/HCl to form chlorobenzene is

(A) Cannizarro's reaction

(B) Kolbe's reaction

(C) Sandmeyer's reaction

(D) Raschig's reaction

Answer: (D)

Question 8 :

Denatured alcohol is
(A) Rectified spirit

(B) Undistilled ethanol

(C) Rectified spirit + methanol + naphtha

(D) Ethanol + methanol

Answer: (D)

Question 9 :

During the adsorption of krypton on activated charcoal at low temperature, _____.

(A) DH < 0 and DS < 0

(B) DH > 0 and DS < 0

(C) DH < 0 and DS > 0

(D) DH > 0 and DS > 0

Answer: (A)

Question 10 :

During the extraction of gold the following reactions take place

$$Au + CN^- + H_2O \xrightarrow{O_2} [X]$$

$$[X] + Zn \rightarrow [Y] + Au$$

X and Y are respectively

(A) $[Au(CN)_2]^-$ and $[Zn(CN)_4]^{2-}$

(B) $[Au(CN)_4]^{3-}$ and $[Zn(CN)_4]^{2-}$

(C) $[Au(CN)_4]^{2-}$ and $[Zn(CN)_4]^{2-}$

(D) $[Au(CN)_2]^-$ and $[Zn(CN)_6]^{4-}$

Answer: (C)

Question 11 :

A transition metal ion exists in its highest oxidation state. It is expected to behave as

(A) a chelating agent

(B) a central metal in a coordination compound

(C) an oxidising agent

(D) a reducing agent

Answer: (C)

Question 12 : Acrolein test is positive for

(A) polysaccharides
(B) proteins
(C) oils and fats
(D) reducing sugars

Answer: (D)

Question 13 :

Among the alkali metals cesium is the most reactive because

(A) its incomplete shell is nearest to the nucleus

(B) it has a single electron in the valence shell

(C) it is the heaviest alkali metal

(D) the outermost electron is more loosely bound than the outermost electron of the other alkali metals

Answer: (C)

Question 14 :

An electric current is passed through an aqueous solution of a mixture of alanine (isoelectric point 6.0) glutamic acid (3.2) and arginine (10.7) buffered at pH 6. What is the fate of the three acids?
(A) Glutamic acid migrates to anode at pH 6. Arginine is present as a cation and migrates to the cathode. Alanine in a dipolar ion remains uniformly distributed in solution.

(B) Glutamic acid migrates to cathode and others remain uniformly distributed in solution.

(C) All three remain uniformly distributed in solution.

(D) All three move to cathode

Answer: (B)

Question 15 :

An organic compound which produces a bluish green coloured flame on heating in presence of copper is

(A) chlorobenzene

(B) benzaldehyde

(C) aniline

(D) benzoic acid

Answer: (B)