Chemistry Model Question Paper - 2

**Question 1**: 50 cm$^3$ of 0.2 N HCl is titrated against 0.1 N NaOH solution. The titration is discontinued after adding 50 cm$^3$ of NaOH. The remaining titration is completed by adding 0.5 N KOH. The volume of KOH required for completing the titration is ______.

(A) 10 cm$^3$
(B) 12 cm$^3$
(C) 10.5 cm$^3$
(D) 25 cm$^3$

Answer: (A)

**Question 2**: 80 g of oxygen contains as many atoms as in

(A) 80 g of hydrogen
(B) 1 g of hydrogen
(C) 10 g of hydrogen
(D) 5 g of hydrogen

Answer: (D)

**Question 3**: 9.65 C of electric current is passed through fused anhydrous magnesium chloride. The magnesium metal thus obtained is completely converted into a Grignard reagent. The number of moles of the Grignard reagent obtained is ______.

(A) $1 \times 10^{-4}$
(B) $5 \times 10^{-4}$
(C) $1 \times 10^{-5}$
(D) $5 \times 10^{-5}$

Answer: (D)
Question 4: A 6% solution of urea is isotonic with
(A) 6% solution of Glucose
(B) 25% solution of Glucose
(C) 1 M solution of Glucose
(D) 0.05 M solution of Glucose

Answer: (C)

Question 5: A bivalent metal has an equivalent mass of 32. The molecular mass of the metal nitrate is
(A) 192
(B) 188
(C) 182
(D) 168

Answer: (B)

Question 6: A body of mass 10 mg is moving with a velocity of 100 ms⁻¹. The wavelength of de-Broglie wave associated with it would be
(Note: h = 6.63 × 10⁻³⁴Js)
(A) 6.63 × 10⁻³⁷m
(B) 6.63 × 10⁻³¹m
(C) 6.63 × 10⁻³⁴m
(D) 6.63 × 10⁻³⁵m
Question 7: A body of mass $x$ kg is moving with a velocity of 100 ms$^{-1}$. Its de Broglie wavelength is $6.62 \times 10^{-35}$m. Hence $x$ is ($h = 6.62 \times 10^{-34}$Js)

(A) 0.15 kg
(B) 0.2 kg
(C) 0.1 kg
(D) 0.25 kg

Answer: (C)

Question 8: A buffer solution is prepared in which the concentration of NH$_3$ is 0.30 M and the concentration of $\text{NH}_4^+$ is 0.20 M. If the equilibrium constant, $K_b$ for NH$_3$ equals $1.8 \times 10^{-5}$, what is the pH of this solution?

(A) 8.73
(B) 9.08
(C) 9.43
(D) 11.72

Answer: (C)

Question 9: A buffer solution contains 0.1 mole of sodium acetate dissolved in 1000 cm$^3$ of 0.1 M acetic acid. To the above buffer solution, 0.1 mole of sodium acetate is further added and dissolved. The pH of the resulting buffer is equal to ______.

(A) pKa
Question 10: A complex compound in which the oxidation number of a metal is zero is
(A) K₄[Fe(CN)₆]
(B) K₃[Fe(CN)₆]
(C) [Ni(CO)₄]
(D) [P₁(NH₃)₄]Cl₂

Answer: (C)

Question 11: Which of the following is used to prepare Cl₂ gas at room temperature from concentrated HCl?
(A) MnO₂
(B) H₂S
(C) KMnO₄
(D) Cr₂O₃

Answer: (C)

Question 12: Which of the following is not an ore of magnesium?
(A) Carnallite
(B) Dolomite
(C) Calamine
(D) Sea water

Answer: (C)

**Question 13**: Which of the following has the highest bond order?

(A) N2
(B) O2
(C) He2
(D) H2

Answer: (A)

**Question 14**: Which of the following gives an aldehyde on dry distillation?

(A) Calcium acetate + calcium benzoate
(B) Calcium formate + calcium acetate
(C) Calcium benzoate
(D) Calcium acetate

Answer: (B)

**Question 15**: Which of the following does not give benzoic acid on hydrolysis?
(A) phenyl cyanide

(B) benzoyl chloride

(C) benzyl chloride

(D) methyl benzoate

Answer: (C)