

Abhishek Chaudhary

Roll No. 1

XII - A

APEEJAY SCHOOL, SHEIKH SARAI-I

FIRST TERMINAL EXAMINATION, 2016-17

09

CLASS-XII (A, B)

CHEMISTRY

SET-2

Time allowed : 3 hrs.

M.M. : 70

General Instructions :

Qs. 1-5 (1 marks each)

Qs. 6-10 (2 marks each)

Qs. 11-22 (3 marks each)

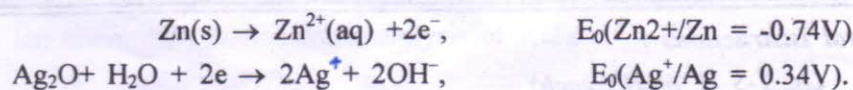
Qs. 23 (4 marks)

Qs. 24-26 (5 marks each)

1. How many lattice points are there in a FCC?
2. Give the relation of cell constant and conductivity.
3. Why is Bi(V)oxide a stronger base than N(V) Oxide?
4. Write the formula of Potassium tri(oxalato)chromate(III).
5. What do you understand by :
 - (a) activity of a catalyst
 - (b) selectivity of a catalyst?
6. How conductivity and molar conductivity of a solution are affected by increase of concentration?
7. Give the principle involved in :
 - (a) froth floatation
 - (b) zone refining
8. Complete the following reactions :
 - (a) $\text{Cl}_2 + \text{NaOH (dil)} \longrightarrow \text{NaCl} + \text{NaOCl} + \text{H}_2\text{O}$
 - (b) $\text{U} + \text{ClF}_3 \longrightarrow \text{UF}_6 + \text{Cl}_2$

P.T.O.

9. Draw graphs showing how rate of a reaction changes with concentration of reactants for :
- zero order reaction
 - first order reaction
10. Draw all the isomers of $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$. *fac, mer*
11. (a) Calculate the charge in coulombs required for oxidation of 1 mole of MnO_4^- to Mn^{2+} .
- (b) Calculate the standard potential and Gibb's energy of the cell in which the following reactions occur



12. Give reasons :
- colloids stabilize due to Brownian motion.
 - chemisorption takes place at relatively high temperatures.
 - adsorption is generally exothermic.
13. Classify analgesics. Give one example of each type.
14. How do you explain amphoteric nature of amino acids? What are essential and non-essential amino acids? Name one essential and one non-essential amino acid.
15. Name the polymers used for :
- manufacture of paints and lacquers.
 - making electrical switches.
 - coating of non-stick in cooking ware. Write the monomers in all the cases.
16. (A) Tetrahedral complex of the type MA_2B_2 does not show geometrical isomerism, why?
 (B) A mole of $\text{CoCl}_3 \cdot 6\text{H}_2\text{O}$ gave 1 mole of AgCl when 1 mole of this compound reacted with excess AgNO_3 . Write the formula with correct coordination sphere. (C) Write the formula of potassium tetra cyanonickelate(II).
17. An element has BCC structure with cell edge of 300pm. The density of the element is 7g/cm^3 . How many atoms are present in 200g of the element?
18. For a first order reaction $\text{A(g)} \rightarrow \text{B(g)} + \text{C(g)}$

TIME(s)	P(mmHg)
0	35.0
360	54.0
720	63.0

Calculate the rate constant.

19. (a) Why is it necessary to convert a sulphide ore to oxide before reduction, (b) What is the role of SiO_2 in the extraction of Cu, (c) Under what conditions can Al reduce MgO ?
20. (a) Why is H_2O a liquid while H_2S a gas at room temperature ?
(b) how is O_3 estimated quantitatively?
21. (A) Resistance of a conductivity cell filled with 0.1 M KCl solution is 100Ω . If the resistance of the same cell when filled with 0.02 M KCl solution is 520Ω , calculate the conductivity and molar conductivity of 0.02M KCl solution. The conductivity of 0.1M KCl solution is 1.29S/m.
22. (A) Why are transition metal ions coloured? (B) Why are trivalent lanthanoid ions coloured? (C) Actinoid contraction is greater from element to element in actinoids than lanthanoid contraction, why?
23. A pond near a factory was smelling of rotten eggs as H_2S was dumped into it. A boy complains to the authorities so that the effluents of the factory are treated before dumping in the pond. (a) which value does the boy show (b) If the solubility of H_2S in water at 1 bar is 0.2m, calculate the Henry's law constant.

OR

24. (A) A 0.001 molal solution of a complex, $\text{Pt}(\text{NH}_3)_4\text{Cl}_4$, in water showed a freezing point depression of 0.0054°C . If K_f of water is 1.8Kkg/mole . What is the correct formula of the molecule with proper coordination sphere. (B) What is reverse osmosis? Give one of its uses.

OR

- (a) A storage battery contains 38% by weight of sulphuric acid. At this concentration vant Hoff's factor is 2.5. At what temperature will the contents of the battery freeze? (K_f of water = 1.86Kkg/mole) (b) Write in increasing order of ΔT_f and T_f ; 1 molal solution of glucose, NaCl and BaCl_2 , justify.
25. Give reasons (a) Of d^4 species, Cr^{2+} is strongly reducing while Mn^{3+} is strongly oxidizing, why? (b) Write two consequences of lanthanoid contraction (c) There are greater horizontal similarities in the properties of transition elements in contrast to main group elements (d) $5d$ elements have higher density than $4d$ and $3d$ elements (e) d^1 configuration is unstable

OR

- (a) Write all the equations involved in the preparation of KMnO_4 from pyrolusite ore (b)

Draw the structures of chromate and dichromate ion. (c) complete the reaction $\text{Cr}_2\text{O}_7^{2-} + \text{H}_2\text{S} \rightarrow$ (d) Why are cuprous compounds white while cupric compounds are coloured?

26. (a) Will hydrolysis of XeF_6 lead to a redox reaction? (b) Why is F_2 a stronger oxidant than Cl_2 although latter has more -ve electron gain enthalpy? (c) Write in increasing order of ionic character NaCl , NaBr , NaI , NaF , justify (d) Write in increasing order of reductant NH_3 , BiH_3 , PH_3 , justify.

OR

(a) $\text{Cl}_2 + \text{dil. NaOH} \rightarrow$ (b) $\text{Cu} + \text{conc. H}_2\text{SO}_4 \rightarrow$ (c) $\text{U} + \text{ClF}_3 \rightarrow$ (d) reaction showing XeF_6 as fluoride ion donor (e) equation for hydrolysis of XeF_6 .

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