SRI BHAGAWAN MAHAVEER JAIN COLLEGE

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Mock Examination Question Paper-1 (January 2019)

Course:	II PUC	**Subject:**	Chemistry
Max. Marks:	70	**Duration:**	3:15 hrs.

Instruction: DO NOT write or mark anything on the question paper.

A. The Question paper has Five Parts, A, B, C, D4 & D_5.

B. Write balanced chemical equation and draw neat labeled diagram where ever necessary.

C. R=8.314 $JK^{-1}mol^{-1}$, At. Number: Ni-28, Co-27, Mn-25

PART- A

I. Answer all the questions.

1. State Raoult's law of a solutions containing non volatile solute.
2. Give an example for maximum boiling azeotropes.
3. What happens to molar conductivity when one mole of KCl dissolved in one liter diluted to three liters?
4. Give the unit of rate constant for zero order reaction?
5. Name the depressants to separate two sulphide ores in froth floatation process.
6. Which noble gas used in the treatment of cancer?
7. What are homoleptic complex?
8. Complete the following equation: $2CHCl_3 + O_2 \xrightarrow{h\nu} ---- + 2HCl$
9. Complete the following reaction $C_6H_5CHO + C_6H_5COCH_3 \xrightarrow{OH^-/293k} -----$
10. Give an example of α amino acid which is optically active.

PARTA – B

II. Answer any five of the following **5x2=10**

11. Give the differences between crystalline and amorphous solids with respect to shape and melting point.
12. Calculate the mass of aluminium deposited at cathode when 193C of current is passed through molten electrolyte containing dissolved alumina (Given molar mass of Al=27.g mol^{-1}, 1F=96500C$mo1^{-1}$)
13. 75% of first order reaction is completed in 30 minutes. Calculate the rate constant of the reaction.
14. Ce^{4+} is a good oxidising agent. Give reason.
15. Explain Kolbe's reaction with example.
16. Among aldehyde, ketone and carboxylic acid which is more reactive towards nucleophilic addition reaction. Given reason.

17. What is the role of these as food additives;

(a) sodium benzoate b) Aspartame.

18. Explain Saponification of oils / fats with equation.

PART – C

III. Answer any five of the Following **5x3=15**

19. a) Explain the extraction of Zinc form Zinc blende. Give equations.

b) What is Calcination? **(2+1)**

20. (a) PH_3 has lower boiling point than NH_3. Why?

(b) Give reaction for the preparation of nitrogen from ammonium dichromate?

(c) What is the basicity of H_3PO_4? **(1+1+1)**

21. (a) In the manufacture of sulphuric acid by contact process, answer the following.

i) What is the role of arsenic purifier?

ii) Why SO_3 Cannot be absorbed by water?

(b) Name the product when ozone reacts with lead sulphide. **(2+1)**

22. (a) How does Cl_2 reacts with

(i) Excess of ammonia (ii) Slaked lime (iii) hydrogen sulphide **(3M)**

23. Give reason:-

(a) Cr^{3+} exhibits paramagnetism while Sc^{3+} do not.

(b) Mn^{2+} is more stable than Cr^{2+}

(c) Ce^{3+} Can be easily oxidized than Ce^{4+}. **(1+1+1)**

24. Write the steps involved in the manufacture of potassium dichromate from Chromite ore. **(3M)**

25. Explain hybridization, geometry and magnetic property of $\left[Co(NH_3)_6\right]^{3+}$ ion using valence bond theory [At.No of Co-27].

26. Explain the crystal field splitting in octahedral complex with neat labeled diagram. **(3M)**

PART – D_4

IV. Answer any three of the following **5+3=15**

27. (a) Calculate the packing efficiency in FCC lattice.

(b) What are p-type semi-conductors? Give an example. **(2M)**

28. (a) What is the boiling point of an aqueous solution containing 0.6g of urea in 100g of water? K_b for water is 0.52 K kg/mol.

(b) What is reverse osmosis? How is it used in the desalination of sea water? **(3+2)**

29. (a) Find the equilibrium constant for the cell reaction of Daniel cell if E^0_{cell} =1.10V.

(b) Write the anode and cathode half-cell reaction in lead-acid battery and also write the cell reaction during recharging of the battery. **(2+3M)**

30. (a) Show that half life period of a reaction is independent of initial concentration of a reaction of first order.

(b) Give any two criteria for the effective collision in a binary reaction.

(c) $2SO_{2(g)} + O_{2(g)} \rightarrow 2SO_{3(g)}$ what is the molecularity of the reaction?

31. (a) Give any two difference between lyophilic and lyophobic colloids

(b) What is homogeneous catalysis? Give an example.

(c) Name the dispersed phase in Gel. **(2+2+1)**

PART-D_5

V. Answer any four of the following **4x5=20**

32. (a) Explain S_N^1 mechanism with an example.

(b) Explain Friedel-craft acylation reaction with an example. **(3+2)**

33. (a) Explain the method of preparation of phenol from cumene process.

(b) How does t-butyl methyl ether reacts with hydrogen iodide? Give the chemical equation.

(c) Name the oxidizing agent used to convert ethanol to acetaldehyde. **(2+2+1)**

34. (a) Benzaldehyde is treated with concentrated NaOH.

(i) Write the equation for the reaction

(ii) Name the reaction

(iii) Name the major product formed.

(b) Complete the following equations.

(i) $R-COONa \xrightarrow[\Delta]{NaOH+CaO} ----- + Na_2C0_3$

(ii) $CH_3-COOH \xrightarrow[\Delta]{Cl_2/\text{Re}dP} ----- + HCl$ **(3+2)**

35. (a) Explain Hoffmann bromamide degradation for the preparation of aniline.

(b) How does benzene diazonium chloride react with H_3PO_2?

(c) Give the IUPAC name of

$$CH_3 - \underset{\displaystyle H}{\underset{|}{N}} - CH_2 - CH_3$$

(2+2+1)

36. (a) Write the Haworth structure of sucrose.

(b) Write the chemical reaction which gives the evidence for the presence of five hydroxyl groups in glucose.

(c) Name the protein present in hair. **(2+2+1)**

37. (a) Name the monomers used in the preparation of Nylon-6,6.

(b) Explain vulcanisation of rubber.

(c) Give an example of biodegradable polymer. **(2+2+1)**

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