



# JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road  
Rajarajeshwari Nagar, Bangalore - 560 098

Date: December 2017

SUBJECT: CHEMISTRY

II PUC  
Mock I

Timings Allowed: 3 Hrs.

Total Marks: 70

### Instructions:

1. The question paper has four parts: A, B, C and D. All parts are compulsory.
2. Write balanced chemical equations and draw labeled diagrams wherever required.
3. Use log tables and the simple calculator if necessary.  
(Use of scientific calculators is not allowed)

### PART-A

I. Answer ALL of the following. (Each question carries 1 mark)

10x1=10

1. Give an example for minimum boiling azeotropes.
2. What happens when pressure which is greater than osmotic pressure is applied on the solution?
3. State first law of Faraday.
4. What is the order of the reaction whose rate constant has the same units as the rate of reaction?
5. What is peptization?
6. Name the reducing agent used in the extraction of iron.
7. What are interhalogen compounds?
8. Complete the reaction.  
 $C_6H_5Cl + Mg \longrightarrow$
9. Among 1-propanol and 1-butanol which has highest boiling point.
10. Give an example for basic amino acid

### PART-B

II Answer any FIVE of the following. (Each question carries 2 marks)

5 x 2 = 10

11. A compound  $A_xB_y$  crystallises in a FCC lattice in which A occupies each corner of a cube and B occupies the centre of each face of the cube. What is the formula of the compound?
12. Write the anode and cathodic reaction of lead storage battery.
13. Derive an expression for half life period of zero order reaction.
14. d-block elements forms complex compounds give reason.
15. What is Lanthanoid contraction?
16. How does propanone react with HCN?
17. Explain Finkelstein reaction. Give example
18. Explain Hell-Volhard Zelinsky reaction with example.

### PART - C

III. Answer any FIVE of the following (each question carries 3 marks)

5 x 3 = 15

19. Explain different zone reaction takes place in blast furnace.
20. Describe with equations the manufacture of ammonia by Haber's process.
21. i. How is chlorine prepared from  $KMnO_4$   
ii How is dioxygen prepared from potassium chlorate?
22. . Complete the following equation:  
 $6NaOH + 3Cl_2 \longrightarrow \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 3H_2O$   
Hot & concentrated  
b) Interhalogen compounds are more reactive than halogens. Why?
23. a) Transition metals and their compounds are used as alloys. Give two reasons.  
b) Calculate the magnetic moment of  $Ti^{+2}$

24. How is pure potassium dichromate manufacture starting chromite ore ?  
 25. Using VBT explain the geometry and magnetic property of  $[\text{Ni}(\text{CN})_4]^{2-}$ .  
 26. For  $[\text{Co}(\text{en})_3]\text{Cl}_3$  :
- Give the IUPAC name,
  - Give the coordination number of the central metal ion,
  - What type of stereoisomerism does it exhibit?

**Part - D**

**IV. Answer any THREE of the following (each question carries 3 marks) 3 x 5 = 15**

27. a. Calculate the packing efficiency in simple cubic unit cell.  
 b. An element has BCC structure if the cell edge of 288pm. The density of the element is 7.2g/cm<sup>3</sup>. How many atoms are present in 208g of the element?
28. a. A solution containing 30g of non-volatile solute exactly in 90g of water has a vapour pressure of 2.8kPa at 298k. further 18g of water is then added in the solution and the new vapour pressure becomes 2.9kPa at 298K. Calculate the molar mass of the solute and vapour pressure of water at 298K.  
 b. Write the difference between ideal and non-ideal solutions.
29. a. Calculate the equilibrium constant of the reaction  $\text{Cu}_{(s)} + 2\text{Ag}^+_{(aq)} \rightleftharpoons \text{Cu}^{2+}_{(aq)} + 2\text{Ag}_{(s)}$   
 b. Explain hydrogen oxygen fuel cell
30. a. Derive an expression for rate constant for zero order reaction.  
 b. Define temperature coefficient of the reaction
31. a) What is i) multimolecular colloid  
 ii) macromolecular colloid  
 iii) give an example for sol  
 b) Write the difference between physical adsorption and chemical adsorption

**V. Answer any FOUR of the following (each question carries 3 marks) 4 x 5 = 20**

32. a. Explain the mechanism of alkaline hydrolysis of tertiary butyl bromide.  
 b. Arly halides are less reactive towards nucleophilic substitution reaction the alkyl halide. Give reason.
33. a. Explain the mechanism of acid catalysed hydration of ethene to ethanol.  
 b. How does phenol react with bromine water?
34. a. Complete the following equations.
- i.  $\text{C}_6\text{H}_5\text{CH}_3 + 2 [\text{O}] \xrightarrow{\text{CrO}_2\text{Cl}_2 / \text{CCl}_4}$
- ii.  $\text{CH}_3\text{COCH}_3 + 4 [\text{H}] \xrightarrow{\text{Zn - Hg / Con. HCl}}$
- b. How does benzaldehyde react with concentrated NaOH?  
 c. Write the observation when aldehyde reacts with Fehling's reagent?
35. a. Write the chemical reactions for the following  
 i. Hoffmann's bromamide degradation reaction.  
 ii. Carbylamine reaction.  
 b. How do you convert BDC to benzene?
36. a. Give an example of globular protein and fibrous protein.  
 b. Write the Haworth's structure of  $\alpha$ - D-glucose.
37. a. Name the catalyst used in the high density polythene  
 b. How is Neoprene prepared?  
 c. Write the partial structure of Bakelite.

\*\*\*\*\*