



Jain College, Jayanagar
I PUC Mock Paper Jan -2020
Subject: Chemistry (34)

Max. Marks: 70

Instructions:

- (i) The question paper has four parts: A,B,C and D. All parts are compulsory
- (ii) Write balanced chemical equations and draw labeled diagrams wherever required
- (iii) Use log tables and simple calculator if necessary.

PART A

I. Answer all the following. Each question carries 1 mark. 10x1=10

1. What is the SI unit of electric current?
2. Name the type of interparticle forces are broken in the evaporation of water.
3. Write the conjugate acid of HS^{-1} ?
4. What is the trend in metallic character of elements down the group?
5. Calculate the oxidation number of Cr in $\text{Cr}_2\text{O}_7^{2-}$
6. What is the color of the flame when sodium is subjected to flame test?
7. Write the chemical composition of Borax?
8. What is water gas?
9. Among Primary, Secondary and Tertiary carbocations, which is more stable?
10. Which metal is used in Wurtz reaction?

PART-B

II. Answer any FIVE of the following. Each question carries 2 marks. 5x2=10

11. A solution is prepared by adding 2g of a substance A to 18g of water. Calculate the mass percent of the solute.
12. State Charle's law and write the mathematical expression of the law.
13. According to VSEPR theory, mention the shapes of water and ammonia.
14. How is sodium bicarbonate prepared from sodium carbonate?
15. Give any two crystalline allotropic forms of carbon.
16. How do you convert 1,2 dibromoethane to ethyne? Give equation.
17. Explain the Friedel crafts alkylation of benzene with equation.
18. What are harmful effects of acid rain?

PART-C

III. Answer any FIVE of the following. Each question carries 3 marks. 5x3=15

19. How does electron gain enthalpy vary down the group and along the period? Give reason.
20. State the postulates of VSEPR theory?
21. Show that oxygen molecule is paramagnetic based on Molecular Orbital Theory.
22. Explain the formation of BeCl_2 using SP hybridization.

23. Balance the following equation by oxidation number method

$$\text{Fe}^{2+} + \text{H}^+ + \text{Cr}_2\text{O}_7^{2-} \longrightarrow \text{Cr}^{+3} + \text{Fe}^{+3} + \text{H}_2\text{O} \text{ (acid medium)}$$
24. How temporary hardness of water is removed by Clark's method? Give one example of ionic hydride.
25. Give the equations involved in the manufacture of washing soda by solvay's process.
26. Write any three differences between graphite and diamond.

PART D

IV. Answer any FIVE of the following. Each question carries 5 marks. 5x5=25

27. (a) An organic substance containing carbon, hydrogen and oxygen gave the percentage composition as C= 40.687%, H=5.085% and O=54.228% .The vapor density of compound is 59.Calculate the molecular formula of the compound.
- (b). Give the S.I unit of (1).Luminous Intensity (2). Amount of the substance [3+2]
28. (a) Write the postulates of Bohr's atomic model.
- (b) Calculate the wave number of spectral line of shortest wavelength appearing in the Balmer series of hydrogen spectrum ($R_H = 1.09 \times 10^7 \text{ m}^{-1}$) [3+2]
29. Explain the significance of four quantum numbers. How many electrons in an atom may have the following quantum numbers $n=3, l=0$? [5]
30. (a) Write any three postulates of kinetic theory of gases.
- (b). Under what condition real gases tend to show ideal gas behavior? [3+2]
31. (a) Calculate the enthalpy of formation of Benzene, if standard enthalpies of combustion of carbon, hydrogen and Benzene are -393.5kJ, -285.3kJ and -3267kJper mol respectively.
- (b) Define Entropy. What is the change in entropy when ice melts to give water? [3+2]
32. (a) Explain the determination of ΔU using bomb calorimeter.
- (b) State Hess's law of constant heat summation. Give an example. [3+2]
33. (a) Explain the effect of pressure, concentration and temperature using LeChatlier's principle on the reaction.
$$\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) \quad H = -x \text{ kJ}$$
- (b) Explain Lewis concept of acids and bases with an example. [3+2]
34. (a) Calculate pH of 0.1M weak monobasic acid whose dissociation constant is 4×10^{-10} at 298K.
- (b) What is solubility product? What is the relationship between solubility and solubility product of salt AB_2 type. [3+2]

V. Answer any TWO of the following. Each question carries 5 marks. 5x2=10

35. (a).How is the estimation of halogens done by Carius method?
- (b) Explain Functional isomerism with an example. [3+2]
36. (a) How is lassaigne's extract prepared? How do you detect nitrogen by lassaigne's test?
- (b) What are electrophiles? Give an example. [3+2]
37. (a) Write the steps involved in mechanism of nitration of benzene.
- (b) Name the product formed when: (i) sodium benzoate is heated with sodalime
- (ii) propene undergoes addition with HBr. [3+2]
