



KLE Society's

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MODEL QUESTION PAPER -2

Class	: II PUC	Subject	: Chemistry	Subject Code	: 34
Year	: 2020 – 21	Duration	: 3 hour 15 minutes	Maximum Marks	: 70

- Instructions:** 1. This question paper consists of four parts A, B, C and D.
2. All parts are compulsory.
3. Draw diagrams wherever necessary. Unlabeled diagrams or illustrations do not attract any marks.

PART – A

I ANSWER ALL OF THE QUESTIONS, EACH QUESTION CARRIES 1 MARK. 10X1=10

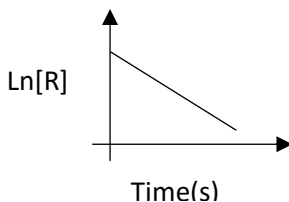
1. Why do gases always tend to be less soluble in liquid as the temperature is increased?
2. Write a mathematical relation between molality & elevation in boiling point.
3. What is the SI unit of molar conductance?
4. What happens to the half life of first order reaction, if the initial concentration of the reactant is doubled?
5. Among Na^+ , Al^{3+} & Ca^{2+} , which is the best coagulating agent to coagulate blood?
6. Name the most abundant noble gas present in the atmosphere.
7. Give the formula of the first compound of noble gas that was synthesized.
8. Name the reagent used in the conversion of 2-Bromobutane to 2-Butene.
9. Give the IUPAC name of the product formed when propanal is heated with NaOH solution.
10. Which are the monomer units of nucleic acid?

PART – B

II ANSWER ANY FIVE OF THE QUESTIONS, EACH QUESTION CARRIES 2 MARKS

5x2=10

11. What portion of an atom is located at i) corner ii) body centre of a cubic unit cell.
12. Write a neat labelled diagram of Daniel cell & write the net cell reaction.
13. For the given plot,
 - i) Deduce the order of the reaction.
 - ii) What does the slope indicates?



14. Mention any two consequences of lanthanoid contraction.
15. Complete the following reactions:
- $\text{CH}_3\text{CH}_2\text{Br} + \text{KCN} \longrightarrow$
 - $\text{CH}_3\text{CH}_2\text{Br} + \text{AgCN} \longrightarrow$
16. Among alcohols and phenols, which one is more acidic and why?
17. Arrange the following in increasing order of acidity. Give reason.
Phenol, o-Nitrophenol, o-Cresol.
18. Name the major product formed when nitrous acid is treated with:
- Methylamine
 - Aniline at low temperature.

PART – C

III ANSWER ANY FIVE OF THE FOLLOWING, EACH QUESTION CARRIES 3 MARKS

5x3=15

19. Name the gas liberated when
- Ammonium dichromate is heated.
 - Copper reacts with dilute HNO_3
 - Zinc reacts with conc. HNO_3
20. a) Describe the preparation of ozonized oxygen with an equation.
b) Name the oxidized product obtained when ozone reacts with lead sulphide. (2+1)
21. a) Which is the strongest acid among the hydrogen halides? Give one reason. (X=F, Cl, Br, I)
b) Write the structure of chlorous acid (HClO_2) (2+1)
22. a) Calculate the magnetic moment of Mn^{2+} ion (Atomic number of Mn = 25)
b) 3d series elements exhibit variable oxidation states. Give reason. (2+1)
23. a) Name the metal of first row transition series
- That has positive value of E^0 (M^{2+}/M)
 - That has maximum number of unpaired electrons in its ground state.
- b) Ce^{4+} is a strong oxidizing agent. Give reason. (2+1)
24. a) Write the energy level diagram for the crystal field splitting in tetrahedral complexes.
b) What is spectrochemical series? (2+1)
25. Based on VBT, explain the formation of $[\text{Co}(\text{NH}_3)_6]^{3+}$ (3)
26. a) Explain bonding in metal carbonyls
b) Why Nickel does not show low spin octahedral complex. (2+1)

PART – D

IV ANSWER ANY THREE OF THE FOLLOWING, EACH QUESTION CARRIES 5 MARKS

3x5=15

27. a) Niobium crystallises in a body centered cubic structure. If density is 8.55gcm^{-3} calculate atomic radius of Niobium (Atomic mass of niobium is 93u)
b) A cubic solid is made up of two elements P & Q. Atoms of Q are present at the corners of the cube and atom P at the body centre, what is the formula of the compound? (3+2)
28. a) Boiling point of water at 750mm Hg is 99.63°C . How much sucrose is to be added to 500g of water such that it boils at 100°C ? Molal elevation constant for water is 0.52Kkgmol^{-1} . (3+1+1)
b) Two liquids Y & Z boils at 100°C and 120°C respectively. Which one of them will have higher

vapour pressure at 80°C?

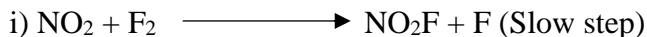
c) How does sprinkling of common salt help in cleaning the snow covered roads in hilly areas?

29. a) Predict the products of electrolysis of dilute aqueous solution of sulphuric acid with inert electrodes

b) Electromotive force of a cell $\text{Mg}/\text{Mg}^{2+} \parallel \text{Ag}^+/\text{Ag}$ is 3.17V under standard conditions. Calculate the maximum work that can be obtained by operating the cell? (2+3)

30. a) A first order reaction is 10% completed in 10 minutes. Calculate the time taken for the 90% completion of the reaction.

b) Reaction between NO_2 and F_2 to form NO_2F takes place by the following mechanism



Write the rate expression for the reaction.

(4+1)

31. a) Explain an experiment to determine the nature of charge on colloidal particles.

b) Why is adsorption always an exothermic reaction?

(3+2)

IV ANSWER ANY FOUR OF THE FOLLOWING, EACH QUESTION CARRIES 5 MARKS

4x5=20

32. a) Write any three isomers of the compound having formula $\text{C}_4\text{H}_9\text{Br}$

b) In case of optically active alkyl halides the product of nucleophilic substitution reaction has inverted configuration. What is the mechanism involved?

c) Haloalkanes when boiled with aqueous KOH gives a racemic mixture of alcohol. Name the mechanism involved in the reaction (3+1+1)

33. a) Account for the following:

i) Boiling point of ethanol is more than that of methoxy methane.

ii) Solubility of phenol in water is less than that of methanol.

b) How does anisole react with methyl chloride?

c) Name the metal that can displace hydrogen from alcohol.

(2+2+1)

34. a) Explain the mechanism of addition of HCN to aldehydes in presence of NaOH

b) Arrange the following carbonyl compounds in increasing order of their reactivity of nucleophilic addition reaction. Give reason

Ethanal, Propanal, Propanone, Butanone.

(3+2)

35. a) A compound 'A' was prepared by the oxidation of compound 'B' with alkaline KMnO_4 . When A is heated with compound B in presence of con. H_2SO_4 , it produces a fruity smell of compound C.

Identify the compounds A, B and C.

(3+2)

b) What is decarboxylation reaction? Give an example.

36. a) What is Hinsberg's reagent? How is it used to distinguish between primary and secondary amines?

b) Give reason: i) Aromatic primary amines cannot be prepared by Gabriel's synthesis.

ii) Primary amines have high boiling points than secondary amines. (3+2)

37. a) What happens when α -D Glucose reacts with the following reagents:

i) HI ii) Bromine water

b) Name the following

i) Nucleic acid which is responsible for genetic information.

ii) Optically inactive α amino acid.

c) Define the Isoelectric point of amino acids (2+2+1)

