CHEMISTRY MODEL QUESTION PAPER

HSE II MAX.MARK 60

TIME;2HRS 15MIN

(Including 15 mts cool off time)

Section A

Answer any four questions from 1 - 5 each carries 1 mark

1. In a solution of component A and B, A-B interaction are weaker than those between A-A or B-B interactions. The type of deviation shown by this solution is called ------

2. Zr and Hf has similar atomic radii due to ------

3. Primary valency of Co in $[Co(NH_3)_6]Cl_3$ is -------

4. Phenol heated with zinc dust gives ------

5. Which among the following show positive iodoform test a)HCHO b) CH_3-CHO c) CH_3OH d) CH_3-CH_2-CHO

Section B

Answer any questions from questions 6 to 15 each carries 2 marks

6. Henry's law is related to solubility of gas in a liquid at a given temperature. state Henry's law and write any one application.

7. what is an azeotropic mixture? Give an example.

8. write any two differences between primary and secondary cell.

9. Give the relation between different rate constants K_1 and K_2 to the respective temperatures T_1 and T_2 for a given reaction. Give the name of the relation.

10. Write any four characteristic properties of transition elements.

11. Write the IUPAC names of the following coordination compounds.

a. $K_4[Fe(CN)_6]$

b.$[Cr(NH_3)_3(H_2O)_3]Cl_3$

12. Which of the following is more reactive towards SN^1 reaction with OH^- ion. Justify your answer.

CH_3Cl or $(CH_3)_3CCl$

13. CH_3-CH_2-CHBr-CH_3 react with alcoholic KOH gives A and B

Which is the major product and name the rule behind it.

14. How will you convert aniline to chlorobenzene?

15.What is denaturation of proteins?

Section C

Answer any 8 questions from question 16 to 26, each carries 3 marks.

16. a) what is osmotic pressure?

b)calculate the osmotic pressure exerted by a solution prepared by dissolving 1.5 g of a polymer of molar mass 185000 in 500 ml of water at 27°C [R=0.0821 L atm K^{-1} mol^{-1}]

17.a) State Kohlrausch Law

b)The molar conductance at infinite dilution for NaCl,HCl,and Sodium acetate are 126.4, 425.9 and 91.0 Scm^2mol^{-1} respectively. calculate molar conductance at infinite dilution for acetic acid.

18. a) Distinguish between order and molecularity.

b) Give the expression for half life period of first order reaction

19. Explain the preparation of potassium dichromate from chromite ore?

20. List various types of structural isomerism possible for coordination compounds giving an example for each.

21. Write the product and name the reaction chlorobenzene on treatment with Sodium in dry ether gives

22. Distinguish between primary, secondary, tertiary alcohols.

23. An aldehyde A, when treated with dil.NaOH a compounds B is formed. If B is 3-hydroxybutanal

a) identify A

b) write the name of above reaction

c) write the product when B is heated.

24. Convert the following

a) Toluene to Benzaldehyde

b) Benzene to Benzaldehyde

c) Benzene to Acetophenone

25. What is Hinsberg reagent ?. Explain the method to distinguish between different class of amines using Hinsberg reagent.

26. Write any three difference between DNA and RNA.

Section D

Answer any four questions from question number 27- 31, each carries 4 marks.

27. a) what are fuel cells?

b) write the overall cell reaction in H_2-O_2 fuel cell?

c) what are the advantages of fuel cells?

d) Diagrammatically represent hydrogen-oxygen fuel cell.

28. Derive the integrated rate expression for first order reaction. Draw the graphical representation.

29. Why $[Ni(CN)_4]^{2-}$ is diamagnetic and $[NiCl_4]^{2-}$ is paramagnetic. Explain using valence bond theory.

30. Explain the following with equation

a)Williamson's synthesis

b)Reimer Tiemann reaction

31) Explain the following

a) Clemmensen reduction

b) Wolff- Kishner reduction

c) Etards reaction

d) HVZ Reaction

Prepared by Neyyattinkara cluster batch 3

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BATCH NO : 3 (Plus Two)

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No	Unit	Question pattern				Total	
		Objective		Descriptive			
		No. of Questions	Score	No. of Questions	Score	No. of Questions	Score
1	Solutions	1	1	3	7	4	8
2	Electrochemistry			3	9	3	9
3	Chemical Kinetics			3	9	3	9
4	D and F block elements	1	1	2	5	3	6
5	Co-ordination Compounds	1	1	3	9	4	10
6	Halo alkanes and arenes			3	7	3	7
7	Alcohols, phenols and Ethers	1	1	2	7	3	8
8	Aldehydes, ketones and Carboxylic acid	1	1	3	10	4	11
9	Amines			2	5	2	5
10	Biomolecules			2	5	2	5
11							
12							
13							
14							

Note: Number in the brackets denotes choice