



KLE Society's

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MODEL QUESTION PAPER -3

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 THE QUESTIONS.EACH CARRIES 1 MARK. 10×1=10

1. Why is the vapour pressure of an aqueous solution of glucose lower than that of water?
2. What is the significance of Henry's law constant?
3. What happens to molar conductivity when one mole of KCl dissolved in one litre is diluted to five litres?
4. If $k=5.6 \times 10^{-3} \text{ mol L}^{-1}\text{s}^{-1}$. What is the order of the reaction?
5. How does ΔG changes during adsorption?
6. Which noble gas does not occur in atmosphere?
7. Complete the following equation:
 $\text{XeF}_6 + \text{H}_2\text{O} \longrightarrow \text{_____} + 2\text{HF}$
8. What is the name of the following reaction:
 $\text{R-X} + \text{AgF} \longrightarrow \text{RF} + \text{AgX}$
9. Ethanal undergoes aldol condensation reaction. Give reason.
10. Name the nitrogen base present only in DNA not in RNA.

PART B

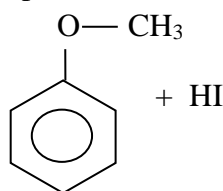
II. ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.EACH CARRIES 2MARKS. 5×2=10

11. Name two types of 2 dimensional close packing arrangement.
12. Give any two differences between metallic and electrolytic conductors.
13. The conversion of molecules X to Y follows second order kinetics. If the concentration of X is increased to three times, how will it affect the rate of formation of Y .?
14. a) What is the cause for lanthanoid contraction?
b) Why Ce shows +4 oxidation state?
15. How does alkyl halides react with aqueous KOH? Give equation.

16. What happens when phenol is treated with conc. HNO_3 ?

17.a) Write the IUPAC name of major product in Friedel-Crafts acylation of anisole.

b) Complete the reaction:



18. Explain Hoffmann's bromamide reaction.

PART C

III. ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS . EACH CARRIES 3MARKS.

5×3=15

19. Describe the manufacture of nitric acid by Ostwald's process.

20.a) Ozone is thermodynamically unstable than oxygen. Give reason.

b) The bond lengths O-O in ozone are identical. Why?

(2+1)

21. a) Write any two anomalous behaviour of fluorine.

b) Give reason- Interhalogen compounds are more reactive than halogens.

(2+1)

22. a) Calculate the magnetic moment of Cr^{3+} (Z=24).

b) On what ground can you say that Scandium (Z=21) is a transition element but Zinc (Z=30) is not? (2+1)

23.a) Which of the following ion is coloured:- Sc^{3+} , Zn^{2+} , Cr^{3+} .

b) Transition metals form large number of complex compounds. Give reason.

(1+2)

24. a) What are polydentate ligands? Give one example.

b) Give the IUPAC name of $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$.

(2+1)

25. Based on VBT explain the formation of $[\text{NiCl}_4]^{2-}$.

26.a) What are metal carbonyls? Give one example.

b) What are heteroleptic complexes?

(2+1)

PART D

IV. ANSWER ANY THREE OF THE FOLLOWING QUESTIONS. EACH CARRIES 5 MARKS.

3×5=15

27.a) Calculate the packing efficiency of simple cubic lattice.

b) The edge of FCC unit cell of platinum is 392 pm and density is 21.5 g/cm^3 . Calculate the Avogadro number. (atomic mass=195.08)

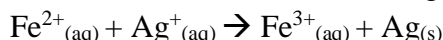
(3+2)

28.a) Calculate the mass of a non volatile solute (molar mass 40 g/mol) which should be dissolved in 114 g octane to reduce its vapour pressure to 80%.

b) Plot a graph for a non-ideal solution which shows negative deviation from ideal behavior.

(3+2)

29.a) Calculate ΔG° for the following reaction:

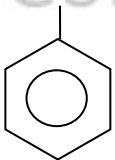


Given: $E^{\circ}_{\text{cell}} = +0.03\text{V}$, $F = 96500\text{C}$.

- b) Write the electrode reaction taking place during electrolysis of aqueous NaCl. (3+2)
- 30.a) Show that the time taken for 99% change in first order reaction is double that for 90% change. (3+2)
- b) Derive an expression for the half-life period of a first order reaction. (3+2)
- 31.a) Give the differentiate between Physisorption and Chemisorption. (3+2)
- b) What is Brownian movement? What is the cause for the Brownian movement ? (3+2)

V. ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS.EACH CARRIES 5 MARKS.

4×5=20

- 32.a) Give the preparation of aryl halides by Sandmeyer's reaction . (3+2)
- b) What is the order of reactivity among 1° , 2° and 3° alkyl halides in S_N1 reaction? (2+1+2)
- c) What are ambidentate nucleophiles? Give an example. (2+1+2)
- 33.a) What is the effect of : (3+2)
- (i) electron withdrawing group on acidity of phenols
 - (ii) electron donating group on acidity of alcohols
 - (iii) boiling point of alcohols on increasing number of carbon atoms
- b) What happens when ether is heated with limited amount of HI? Explain with an example. (3+2)
- 34.a) Explain Stephen's reduction. Give equation. (2+2+1)
- b) Write equation for (2+2+1)
- (i) the reaction between formaldehyde and conc.KOH
 - (ii) the formation of oxime from carbonyl compound.
- c) Boiling points of aldehydes and ketones are lower than alcohols. Give reason. (2+2+1)
- 35.a) Explain the formation of anhydrides from carboxylic acid with an example (2+3)
- b) How do you convert phthalic acid into phthalimide? Give equation. (2+3)
- 36.a) Between methyl amine and ammonia which has lower pK_b value and why? (2+3)
- b) Write the IUPAC name of : $\text{H}_3\text{C-N-CH}_3$
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- c) How are primary amines prepared from nitro compounds? Write the equation (2+1+2)
- 37.a) Write the Haworth structure of $\alpha\text{-D-(-)-fructofuranose}$. (2+2+1)
- b) What are Zwitter ions? (2+2+1)
- c) How many hydrogen bonds are present between guanine and cytosine? (2+2+1)