aglasem.com

FOR KARNATAKA CLASS 12 PREPARATION

# Karnataka 2nd PUC Model Question Paper 2027 for Chemistry (Paper 5)

| EXAM | YEAR | TYPE | SUBJECT |
| --- | --- | --- | --- |
| Karnataka Class 12 | 2027 | Sample Paper | Chemistry |

**GOVERNEMENT OF KARNATAKA**

**KARNATAKA SCHOOL EXAMINATION AND ASSEMENT BOARD**

6th CROSS, MALLESHWARAM, BENGALURU-560003

**2026-27 II PUC MODEL QUESTION PAPER-5**

**Subject:** 34 = Chemistry **Maximum Marks:** 70

**Time:** 3.00 Hours **No. of Questions:** 46

**Instructions**

1. Question paper has FIVE parts. All parts are compulsory.
2. a. Part-A carries 20 marks. Each question carries 1 mark.
   b. Part-B carries 06 marks. Each question carries 2 marks.
   c. Part-C carries 15 marks. Each question carries 3 marks.
   d. Part-D carries 20marks. Each question carries 5 marks.
   e. Part-E carries 09 marks. Each question carries 3 marks.
3. In Part-A questions, **first attempted answer** will be considered for awarding marks.
4. Write balanced chemical equations and draw neat labeled diagrams and graphs wherever necessary.
5. Direct answers to the numerical problems without detailed steps and specific unit for final answer will not carry any marks.
6. Use log tables and simple calculator if necessary (use of scientific calculator is not allowed).
7. For a question having circuit diagram/figure/ graph/ diagram, alternate questions are given at the end of question paper in a separate section for visually challenged students.

**PART-A**

**I. Select the correct option from the given choices.** **15 ×1 = 15**

1. When converting a disaccharide to monosaccharides, the bond that is hydrolysed is
   (a) Disulfide bond (b) Glycosidic bond
   (c) Phosphodiester bond (d) Hydrogen bond

2. If molality of the dilute solution is doubled, the value of the molal depression constant ($K_f$) will be **(E)**
   (a) doubled (b) halved
   (c) tripled (d) unchanged

3. The relation between crystal field splitting energy of octahedral and tetrahedral complexes is
   (a) $\Delta t = (4/9)\ \Delta_o$ (b) $\Delta o = (4/9)\ \Delta_t$
   (c) $4\Delta t = 9\Delta_o$ (d) $\Delta t = (9/4)\ \Delta_o$

4. The reducing agent used to reduce carboxylic to primary alcohols in excellent yield is
   (a) Pd (b) $LiAlH_4$

(c) $NaBH_4$ (d) Ni

5. A plot between ln K vs 1/T, the slope is equal to

(a) $E_a/R$ (b) $E_a/2.303R$

(c) $-E_a/R$ (d) $-E_a/2.303R$

6. The correct order of basic strength in case of ethyl substituted amines and ammonia in aqueous solution is:

(a) $(C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5NH_2 > NH_3$ (b) $(C_2H_5)_3N > (C_2H_5)_2NH > C_2H_5NH_2 > NH_3$

(c) $(C_2H_5)_3N > C_2H_5NH_2 > (C_2H_5)_2NH > NH_3$ (d) $NH_3 > (C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5NH_2$

7. Aniline undergoes bromination with excess bromine water to form gives 2,4,6-tribromoaniline. To obtain monobromoaniline as the major product, which sequence of reactions should be followed.

(a) bromination followed by acetylating amino group.

(b) acetylating the amino group followed by bromination and hydrolysis

(c) hydrolysis, bromination and acetylation

(d) bromination, acetylation and hydrolysis.

8. Which of the following statement is not true about the acidic nature of carboxylic acids?

(a) Smaller the $pK_a$ value, stronger is the acid.

(b) The presence of electron donating group on the phenyl ring of aromatic carboxylic acid increases their acidity.

(c) The presence of electron withdrawing group on the phenyl ring of aromatic carboxylic acid increases their acidity.

(d) Carboxylic acids are weaker than mineral acids.

9. The pair of electrolytes that possess same value for the constant (A) in the $\Lambda_m = \Lambda_m^0 - A\sqrt{C}$

(a) $NH_4Cl$, NaBr (b) NaBr, $MgSO_4$

(c) NaCl, $CaCl_2$ (d) $MgSO_4$, $Na_2SO_4$

10. Match the coordination compounds given in column I with type of isomerism exhibited by them in column II:

| **Column I (Coordination compound)** | **Column II (Isomerism)** |
|---|---|
| i. $[Co(en)_3]Cl_3$ | A. Linkage isomerism |
| ii. $[Co(NH_3)_6][Cr(CN)_6]$ | B. Optical isomerism |
| iii. $[Co(NH_3)_5(SCN)]^{+2}$ | C. Geometrical isomerism |
| iv. $[Co(NH_3)_4Cl_2]^{+}$ | D. Coordination isomerism |

(a) i→ B, ii→ D, iii→ A, iv→ C (b) i→C, ii→ D, iii→ A, iv→ B

(c) i→ D, ii→ A, iii→ A, iv→ C (d) i→ B, ii→ A, iii→ C, iv→ D

11. Two compounds 'A' and 'B' were being tested for their boiling points. It was observed that 'A' started boiling after 'B', when both were subjected to same conditions. If the compound 'B' is acetone, which of the following can be compound 'A'?

(a) Methoxyethane (b) Propan-1-ol

(c) Propanal (d) n-Butane

12. The haloarene cannot be prepared from Sandmeyer's reaction is

(a) $C_6H_5$-Cl (b) $C_6H_5$-Br

(c) $C_6H_5$-F (d) Both a and b

13. Although +3 is the characteristic oxidation state for lanthanoids but cerium also shows + 4 oxidation state because of

(a) Cerium+ 4 has less stable half-filled $4f^7$-orbital.

(b) Cerium+ 4 has more stable half-filled $4f^7$-orbital.

(c) Cerium + 4 has noble gas configuration $4f^0\ 5d^0\ 6s^0$.

(d) Cerium + 4 has more stable completely filled $4f^{14}$-orbital.

14. During osmosis, the solvent molecules are moving from

(a) Hypotonic solution to hypertonic solution

(b) Hypertonic solution to hypotonic solution

(c) Higher concentrated solution to lower concentrated solution

(d) Higher osmotic pressure solution to lower osmotic pressure solution.

15. The chemical formula of glycerol is,

(a) $C_3H_6O_2$ (b) $C_3H_3O_3$

(c) $C_2H_8O_2$ (d) $C_3H_8O_3$

**II. Fill in the blanks by choosing the appropriate word from those given in the brackets:**

**(Scandium, Zn, phosphodiester, increases, decreases, geminal dihalide)** **5 ×1 = 5**

16. At the same partial pressure and temperature as the value of Henry's constant of a gas increases its solubility _____.

17. Most of the transition metals forms ionic oxides except _____.

18. Ethylidene chloride is a _____

19. Electron accepting group _____ acidity of phenol.

20. Nucleotides are joined together by _____ linkage between 5′ and 3′ carbon atoms of pentose sugar.

## PART – B

**III. Answer any three of the following. Each question carries 2 marks.** **3 × 2 = 6**

21. What are freons. Give an example.
22. What are the two conditions for effective collision?
23. Name two functions of glucocorticoids.
24. Earlier members of Lanthanides are quite reactive, similar to element A and with increasing atomic number, Lanthanoids behave more like element B. Identify A & B elements.
25. Explain preparation of phenol from isopropyl benzene with chemical equation.

## PART – C

**IV. Answer any three of the following. Each question carries 3 marks.** **3 × 3 = 9**

26. Give two reason to justify catalytic property of transition elements. Name the catalyst used in Wacker process.
27. Write the geometrical isomers of the complex $\left[MX_2(L-L)_2\right]$, where "M", "X" and "L-L" are central metal atom/ion, monodentate ligand and didentate ligand respectively. Identify the optically inactive form of it.
28. Write any three limitations of valence band theory of coordination compounds.
29. Write the balanced chemical equations for the following reactions.
    i) Reaction between potassium dichromate and iodide ion in acidic medium.
    ii) Reaction between potassium permanganate and iodide ion in neutral or alkaline medium.
    iii) Reaction between potassium permanganate and oxalate ion in acidic medium
30. Draw energy level diagram of crystal field splitting in octahedral complex. Write the electronic configuration of $d^4$ system when $P > \Delta_o$

**V. Answer any two of the following. Each question carries 3 marks.** **2 × 3 = 6**

31. Define half-life period? Show that half-life period of first order reaction is independent on initial concentration of reactant.
32. Plot the graph of molar conductivity vs concentration for KCl and acetic acid. Which electrolyte's limiting molar conductivity can be determined by this graph?
33. In a laboratory experiment, a student dissolves 6 g of urea in 180 g of water at constant temperature and observes that the vapour pressure of the solution is lower than that of pure water. Name the law that explains this observation, state the law, and write its mathematical expression.
34. Name the electrolytes used in Mercury cell. Write its anodic and cathodic reactions.

## PART – D

**VI. Answer any four of the following. Each question carries 5 marks.** **4 × 5 = 20**

35. (a) Write the IUPAC name and structure of DDT. Give the reason, why the use of DDT increased

enormously on a worldwide basis after World War II.

(b) Explain Wurtz-Fittig reaction for the preparation of toluene with chemical reaction. **(3+2)**

36. (a) Which disaccharide is also known as invert sugar? Write the Haworth structure of it.

(b) What are non-essential amino acid? Give an example for optically inactive non-essential amino acid. **(3+2)**

37. (a) Name the chemical reaction that differentiates ethanal and propanal. Write chemical reaction of it.

(b) Explain Kolbe electrolysis reaction for sodium acetate. **(3+2)**

38. (a) Write the structures of the products obtained when aniline undergoes nitration at 288 K.

(b) Name one electrophilic substitution reaction that aniline do not undergo. Justify your answer. **(3+2)**

39. (a) Write the steps involved in the mechanism of acid catalysed hydration of ethene to ethanol.

(b) Write the product/s obtained when 2-methoxy-2-methylpropane reacts with HI. **(3+2)**

40. (a) What is the chemical composition of Rochelle salt? How does it react with benzaldehyde?

(b) Write the chemical reaction between cyclohexene and hot acidified $KMnO_4$. Write the IUPAC name of the product formed in this reaction. **(3+2)**

## PART – E (PROBLEMS)

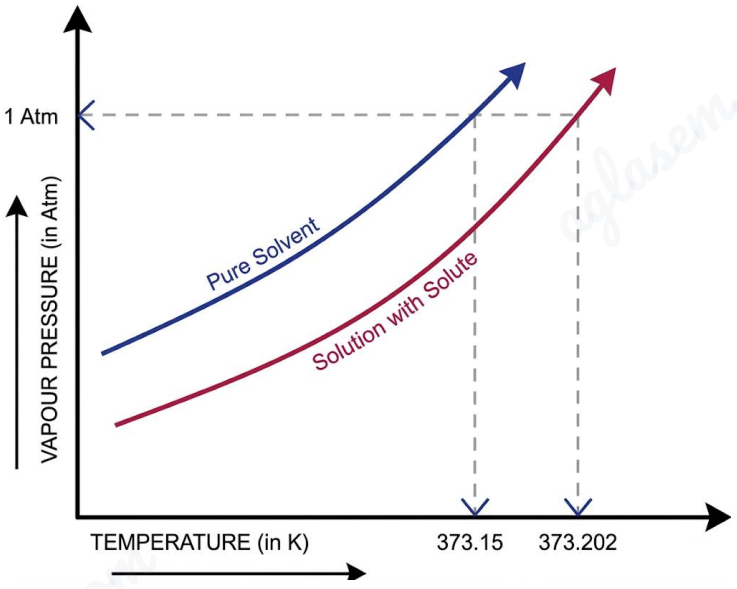
**VII. Answer any three of the following. Each question carries 3 marks.** **3 × 3 = 9**

41. In a reaction, $2A \longrightarrow R$, the concentration of A decreases from 0.5 mol $L^{-1}$ to 0.4 mol $L^{-1}$ in 10 minutes. Calculate the rate during this interval?

42. At same temperature, 6% of urea is isotonic with 5% solution of unknown non-electrolyte A. Calculate the molar mass of unknown non-electrolyte A. (molar mass of urea 60 $gmol^{-1}$)

43. An electric current of 100 ampere is passed through a molten liquid of sodium chloride for 5 hours. Calculate the volume of chlorine gas liberated at the electrode at NTP.

44. The vapour pressure (in Atm) curve for solution containing non-volatile solid substance "G' and pure solvent is plotted against temperature (in K) is as shown in figure. Calculate the molality of the solution. ($K_b$ for water is 0.52 K Kg $mol^{-1}$).




45. The rate constant of a first order reaction increases from $2\times10^{-2}s^{-1}$ to $4\times10^{-2}s^{-1}$ when the temperature



aglasem.com For more Question Papers, Sample Papers, Notes & Syllabus visit aglasem.com 

changes from 300 K to 310 K. Calculate the energy of activation ($E_a$). [log 2 = 0.3010, log 2.5 = 0.3979, log 4 = 0.6020, R = 8.314 $JK^{-1}mol^{-1}$].

46. Calculate the emf of the cell in which the following reaction takes place.

$Ni(s) + 2Ag^{+}$ (0.002M) $\rightarrow Ni^{2+}$(0.160M) +2Ag(s) Given that $E^{o}_{cell}$=1.05 V.

**PART – F**

**(For visually challenged students only)**

44. The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively, at 350 K. Find out the composition of the liquid A if total vapour pressure is 600 mm Hg.

*********