

SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH - 2023

PART - III CHEMISTRY

Maximum – 60 scores

Name

Time: 2 Hours

Reg. No

Cool-off time:15 minutes

(Sample question paper prepared by Kottarakkara cluster, Batch -21)

General Instruction to candidates:

- There is a ‘cool off time’ of 15 minutes in addition to the writing time.
- Use the ‘cool off time’ to get familiar with questions to plan your answers.
- Read questions carefully before answering.
- Read instructions carefully.
- Calculations, figures and graphs should be shown in the answer sheet itself.
- Malayalam version of questions is also provided.
- Give equations wherever necessary.
- Electronic devices except non-programmable calculators are not allowed in the exam hall

വിദ്യാർത്ഥികൾക്കുള്ള പൊതുനിർദ്ദേശങ്ങൾ :

- നിർദ്ദിഷ്ട സമയത്തിന് പുറമെ 15 മിനിറ്റ് ‘കൂൾ ഓഫ് ടൈം’ ഉണ്ടായിരിക്കും.
- ‘കൂൾ ഓഫ് ടൈം’ ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- നിർദ്ദേശങ്ങൾ മുഴുവനും ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം.
- ചോദ്യങ്ങൾ മലയാളത്തിലും നൽകിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

Answer any four questions from 1 to 5. (Each carries 1 score)

1. Identify the mixture showing positive deviation.
 - a) Ethanol + acetone
 - b) Phenol + aniline
 - c) Acetone + chloroform
 - d) Nitric acid + water
2. Unit of rate constant of a reaction is mol L⁻¹ s⁻¹. What is the order of the reaction?
3. [Co(en)₂Cl₂]⁺. What is the co-ordination number of central metal ion in the complex?
4. What is picric acid?
5. What is Hinsberg reagent?

Answer any Eight questions from 6 to 15. (Each carries 2 scores)

6. Osmotic pressure measurement is widely used to determine molar mass of proteins, polymers and other macromolecules. Why?
7. State Henry’s law. Mention any one of its application.
8. State Kohlrausch’s law.
9. Distinguish primary cell and secondary cell with examples
10. a) What is SHE?
 - b) The electrode potential of SHE is.....

11. Write the difference between order and molecularity
12. Write the IUPAC names of following co-ordination compounds
 - a) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
 - b) $\text{K}_3[\text{Fe}(\text{CN})_6]$
13. Write a test to distinguish between aldehydes and ketones.
14. Arrange the following in the order of their acidity and give reason.
(Methoxy benzoic acid, Benzoic acid, nitro benzoic acid)

15. What is denaturation of protein?

Answer any Eight questions from 16 to 26. (Each question carries 3 scores)

16. 1.00 g non-electrolyte solute dissolves in 50 g of benzene lowered the freezing point of benzene by 0.40 K. the freezing point depression constant of benzene is $5.12 \text{ K kg mol}^{-1}$. Find the molar mass of the solute
17. Explain the electrochemical theory of rusting of iron
18. The rate constants of a reaction at 500 K and 700 K are 0.02 s^{-1} and 0.075 s^{-1} respectively. Calculate the value of E_a and A.
19. (a) What are the factors affecting the rate of a reaction?
(b) A reaction is first order in A and second order in B. Write the differential rate equation.
20. What is Lanthanide contraction? Write its consequences
21. Explain the preparation of potassium dichromate.
22. Explain the splitting of d-orbitals in octahedral complex.
23. a) Chloroform is stored in coloured bottles. Why?
b) Write the product;
 $2 \text{ CH}_3\text{CH}_2\text{Cl} + \text{Na (ether medium)} \rightarrow ?$
24. Explain the test used to distinguish 1° , 2° and 3° alcohols.
25. a) $2\text{H} - \text{CHO} + \text{NaOH} \rightarrow \text{A} + \text{B}$. Identify A and B
b) $\text{CH}_3 - \text{COOH} + \text{SOCl}_2 \rightarrow \text{A} + \text{SO}_2 + \text{HCl}$. Identify A
26. Write the difference between DNA and RNA.

Answer any four questions from 27 to 31. (Each question carries 4 scores)

27. Discuss the structural isomerism in co-ordination compounds.
28. (a) Distinguish between $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions
(b) Why aryl halides are less reactive towards nucleophilic substitution reactions?.
29. a) Write Reimer Tiemann Reaction
b) Phenols are more acidic than alcohols. Why?

30. Explain the following;

(a) HVZ Reaction

(b) Rosenmund's Reduction

31. (a) Write Carbylamine reaction

(b) Compare the basic strength of 1° , 2° and 3° amines in aqueous solutions.

Prepared by

- | | |
|----------------------|------------|
| 1. Elga Thomas, | 6282479969 |
| 2. Sreelakshmi. C, | 7902321432 |
| 3. Jancy. M, | 9061557799 |
| 4. Manjusha. K. P, | 8606825067 |
| 5. Maya. M. R, | 9744314898 |
| 6. Lekshmi Chandran, | 9496738256 |
| 7. Sreeja Mohan, | 8281320395 |
| 8. Uma Devi. T. P, | 9495141816 |
| 9. Beena Luke, | 9446362106 |