

SY-225

Reg. No. :

Name :



**SECOND YEAR HIGHER SECONDARY
SECOND TERMINAL EXAMINATION, DECEMBER-2024**

Part - III

Time : 2 Hours

CHEMISTRY

Cool-off time : 15 Minutes

Maximum : 60 scores

General Instructions 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 and to plan your answers.
- Read questions carefully before answering.
- Read the instructions carefully.
- Calculations, figures and graphs should be shown in the answer sheet itself.
- Malayalam version of the questions is also provided.
- Give equations wherever necessary.
- Electronic devices except non-programmable calculators are not allowed in the Examination 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 നല്കിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാസാഹിത്യം ഉപയോഗിക്കുവാൻ പാടില്ല.

Answer any 4 questions from 1 to 5. Each carries 1 score.

(4 × 1 = 4)

1. Name an alloy which consists of Lanthanoid metal.
2. Give an example of a polyhalogen compound.
3. What is the co-ordination number of Cobalt in $[\text{Co}(\text{en})_2\text{C}_2\text{O}_4] \text{Cl}$?
4. Lucas reagent is a mixture of _____ and _____.
5. Which among the following gives H.V.Z reaction ?
 - (a) HCOOH
 - (b) $\text{CH}_3\text{CH}_2\text{COOH}$
 - (c) $\text{C}_6\text{H}_5\text{COOH}$

Answer any 8 questions from 6 to 15. Each carries 2 scores.

(8 × 2 = 16)

6. Write the anode and cathode reactions of fuel cell.
7. What is Pseudo order reaction ? Give an example.
8. (a) Write the linkage isomer of the compound $[\text{Cr}(\text{NH}_3)_3\text{NO}_2] \text{Cl}_2$. (1)
(b) Draw the structure of EDTA. (1)

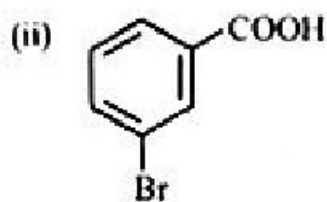
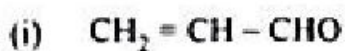
9. Explain the bonding in metal carbonyls.
10. How is the Poisonous gas phosgene formed from chloroform ? Write the chemical equation.
11. Halo alkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as the Chief Product. Explain.
12. Why Phenols have high Boiling Point compared to ethers of same molecular mass ?
13. Write Williamson's ether synthesis with equation.
14. Explain the reaction of methanal with concentrated NaOH. Write the name of the reaction.
15. Which among the following is more acidic ? Justify your answer.
- (a) CH_3COOH
- (b) CH_2ClCOOH

Answer any 8 questions from 16 to 26. Each carries 3 scores. (8 × 3 = 24)

16. Unknown resistance of a solution can be determined with the help of Wheatstone bridge. Explain the determination of unknown resistance with the help of diagram.
17. (a) Mention one oxidising property of $\text{K}_2\text{Cr}_2\text{O}_7$. (1)
- (b) Write the chemical equation of the above oxidation reaction. (1)
- (c) Draw the structure of Manganate ion. (1)

18. Draw the structures of Geometrical isomers of $[\text{Fe}(\text{NH}_3)_2(\text{CN})_4]^-$ and identify the cis and trans isomers.
19. Write the formulas of the following co-ordination compounds :
- Tetra Carbonyl Nickel (0)
 - Potassium tetra hydroxido zincate (II)
 - Tetraammine aquachlorido cobalt (III) chloride
20. Explain three postulates of Werner's co-ordination theory.
21. (a) What are organometallic compounds ? Give an example. (2)
- (b) Identify the chiral and achiral molecule among the following : (1)
- $$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{Br} \end{array}$$
 - $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2\text{Br}$
22. (a) What are enantiomers ? (1)
- (b) What are ambident nucleophiles ? Give an example. (2)
23. (a) Write Reimer Tiemann reaction. (2)
- (b) Write one method of preparation of Picric acid. (1)

24. (a) Write the IUPAC name of the following compounds :

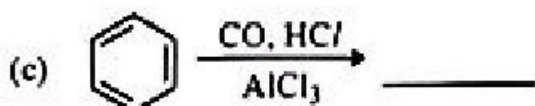
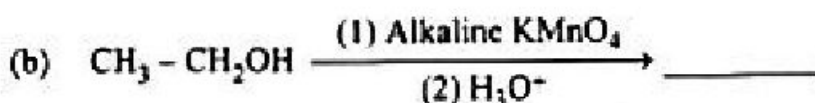
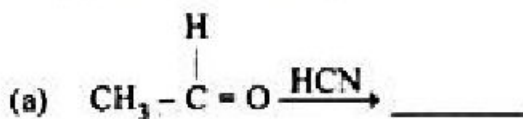


(2)

(b) Write one use of methanoic acid.

(1)

25. Complete the following reactions :



(3)

26. Explain the following reactions :

(i) Aldol condensation

(2)

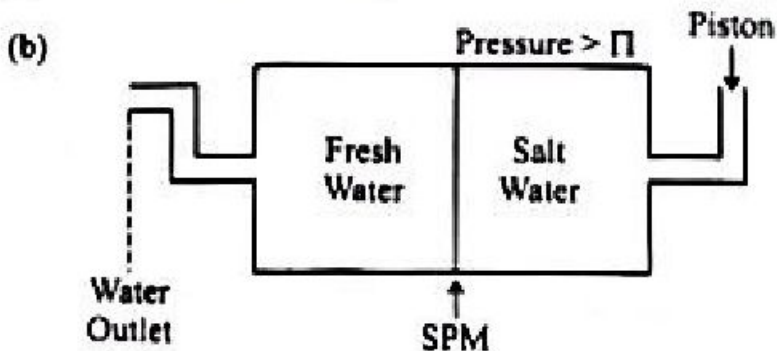
(ii) Clemenson reduction

(1)

Answer any 4 questions from 27 to 31. Each carries 4 scores.

(4 × 4 = 16)

27. (a) Calculate the molarity of a solution containing 5 g of NaOH in 450 ml solution. (2)

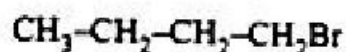
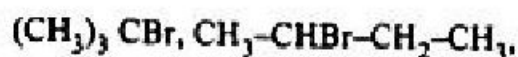


Explain the process mentioned in the above diagram.

(2)

28. (a) Write one difference between Double Salt and a complex by giving examples. (2)
- (b) Mention two applications of co-ordination compounds. (2)

29. (a) State Zaistsev Rule. (2)
- (b) Predict the order of reactivity of the following compounds in S_N1 and S_N2 reactions : (2)



30. Explain the following reactions with chemical equations :

(a) Kolbe's reaction (2)

(b) Esterification reaction (2)

31. (a) Give one test to distinguish aldehydes and ketones. (2)

(b) Write the names of the following reactions : (2)

