

## SAMPLE QUESTION PAPER

### SECOND YEAR HIGHER SECONDARY EXAMINATION, MARCH 2023

Part – III

Time : 2 Hrs.

**CHEMISTRY**

Cool-off time : 15 Minutes.

Maximum : 60 Scores

#### *General Instructions to Students*

- There is a 'cool-off time' of 15 minutes in addition to maximum writing time.
- Use cool-off time to get familiar with questions and to plan your answers.
- Read the instructions carefully.
- Read questions carefully before answering.
- Calculations, figures, graphs should be shown in the answer sheet itself.
- 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.
- നിർദ്ദേശങ്ങൾ മുഴുവനും ശ്രദ്ധാപൂർവ്വം വായിക്കണം
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാ ഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

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

1. Constant boiling liquid mixtures are called \_\_\_\_\_
2. The standard reduction potential of SHE is \_\_\_\_\_
3. Which of the following ion is coloured.  
 $Zn^{2+}$ ,  $Cu^{2+}$ ,  $Ti^{4+}$ ,  $Cu^{2+}$
4. Lucas reagent is \_\_\_\_\_
5. Which of the following is didentate ligand  
 $NH_3$ ,  $CO$ ,  $H_2O$ ,  $NH_2CH_2CH_2NH_2$

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

6. What is the difference between primary and secondary cell.
7. Write Arrhenius equation and explain the terms.
8. Calculate the magnetic moment of  $Mn^{2+}$  ion ?
9. Give the IUPC name of the following
  - a)  $Co [(NH_3)_5Br]SO_4$
  - b)  $K_2[Zn(OH)_4]$
10. Complete the following reactions
  - a)  $2CH_3Br + 2Na \xrightarrow{\text{Dry ether}}$
  - b)  $CH_3Br + NaI \xrightarrow{\text{Acetone}}$
11. Aryl halides are less reactive than alkyl halide towards nucleophilic substitution reaction. Why ?
12. Distinguish between aldehyde and ketone.
13. Explain HVZ reaction.
14. Arrange the following compounds in the increasing order of basicity
  - a) aniline.
  - b) methanamine
  - c) ammonia
  - d) N- methyl methanamine
15. What do you mean by denaturation of protein ? Give an example.

**Answer any 8 questions from 16 to 26. Each carries 3 scores.**

16. a) State Raoult's law
  - b) Draw the vapour pressure - mole fraction curve of an ideal solution.
17. a) What are fuel cells
  - b) give its advantages
  - c) give an example
18. Derive the Nernst equation to find the cell potential of a Daniel cell

19. Show that the half life period of a first order reaction is independent of the initial concentration of the reactants
20. a) What is Lanthanide contraction  
b) What are its consequences
21. Draw the Crystal field splitting diagram of an octahedral complex and tetrahedral complex
22. Convert and name the reaction  
a) Phenol  $\rightarrow$  salicylaldehyde  
b) Phenol  $\rightarrow$  Salicylic acid
23. Convert  
a) Toluene to Benzaldehyde  
b) Benzene to Benzaldehyde
24. Distinguish between primary, secondary and tertiary amines
25. Classify carbohydrates on the basis of hydrolysis
26. What are the differences between SN1 and SN2 reactions

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

27. a) 200 cm<sup>3</sup> of an aqueous solution of protein contains one point 1.26 g of protein. The osmotic pressure of solution at 300 K is found to be  $2.57 \times 10^{-3}$  bar. Calculate the molar mass of the protein  
( $R=0.0831$  L bar / mol / K) (3)
- b) Define Isotonic solution (1)
28. a) Give any two differences between order and molecularity (2).
- b) The rate of a chemical reaction doubles for an increase of 10 K in absolute temperature from 298 K. Calculate  $E_a$ . ( $R= 8.314$  J/K/mol) (2)
29. Write the different structural isomerism in coordination compounds with Example? (4)
30. a) Distinguish between primary, secondary, tertiary alcohols (3)
- b) Convert phenol to benzene (1)
31. Explain.  
a) Aldol condensation  
b) Rosenmund reduction  
c) Cannizzaro reaction  
d) Wolf kishner reduction

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