Reg. No.: ……..

Name: ……..

FIRST YEAR HIGHER SECONDARY EXAMINATION SAMPLE QUESTION PAPER

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 of 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..
- Give equations wherever necessary.
- Electronic devices except non programmable calculators are not allowed in the examination hall.

വിദ്യാർത്ഥികൾക്കുള്ളപൊതുനിർദ്ദേശങ്ങൾ

- നിർദ്ദിഷ്ടസമയത്തിന്പുറമെ 15 മിനിട്ടു 'കൂൾഓഫ്ടൈം'ഉണ്ടായിരിക്കും
- 'കൂൾഓഫ്ടൈം'ചോദ്യങ്ങൾപരിചയപ്പെടാനുംഉത്തരങ്ങൾആസൂത്രണംചെയ്യാനുംഉപയോഗിക്കുക
- ഉത്തരങ്ങൾഎഴുതുന്നതിനുമുമ്പ്ചോദ്യങ്ങൾശ്രദ്ധാപൂർവ്വംവായിക്കണം
- നിർദ്ദേശങ്ങൾമുഴുവനുംശ്രദ്ധാപൂർവ്വംവായിക്കണം
- കണക്കുകൂട്ടലുകൾ, ചിത്രങ്ങൾ , ഗ്രാഫുകൾഎന്നിവഉത്തരക്കടലാസിൽതന്നെഉണ്ടായിരിക്കണം
- ആവശ്യമുള്ളസ്ഥലത്തുസമവാക്യങ്ങൾകൊടുക്കണം
- പ്രോഗ്രാമുകൾചെയ്യാനാകാത്തകാൽക്കുലേറ്ററുകൾഒഴികെയുള്ളഒരുഇലക്ട്രോണിക്ഉപകരണവുംപരീക്ഷഹാളിൽഉപയോഗിക്കുവാൻപാടുള്ളതല്ല

First Year Higher Secondary Examination

(Group II)

CHEMISTRY

Time : 2Hours | Maximum : 60 Score

Cool off Time : 15 minutes

A. ***Answer any* FOUR *from 1 – 5. Each Carries* 1 *Score.*** [4×1=4]

1. 1 mole = ...
2. In which series of line Spectrum of hydrogen is observed in visible region?

   (Lyman, Balmer, Paschen, Brackett)
3. Write the general electronic configuration of d-block elements.
4. The type of hybridisation in ethyne is .....
5. In KMnO4, the oxidation number of Mn is .....

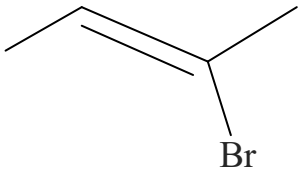
B. ***Any* EIGHT *from 6 – 15. Each carries* 2 *marks.*** [8×2=16]

6. H_2O and H_2O_2 are two oxides of hydrogen.
   i) Which law is behind this? [½]
   ii) State the law [1½]
7. a) State Modern Periodic law. [1]
   b) Write the IUPAC name of element with atomic number 108. [1]
8. The electron gain enthalpy of Cl>F. Why? [2]
9. a) H_2S is a gas but H_2O is a liquid. Give reason. [1]
   b) Which is steam volatile ortho nitro phenol or para nitro phenol ? [1]
10. Differentiate Extensive property and intensive property with one example each. [2]
11. $2H_2O \rightarrow 2H_2O + O_2$
    $_{(aq)}$ $_{(l)}$ $_{(g)}$

    What type of redox reaction is this? Why ? [2]
12. Balance the following redox reaction by oxidation number methods

    $CrO^{2-}{}_{(aq)} + Fe^{2+}{}_{(aq)} + H^{+}{}_{(aq)} \rightarrow Cr^{3+}{}_{(aq)} + Fe^{3+}{}_{(aq)} + H_2O_{(l)}$

13. Write the IUPAC name of the following [1+1=2]

a) 

b) $CH_3 — \underset{\underset{O}{\|}}{C} — CH_2 — COOH$

14. Name the isomerism exhibited by C_3H_8O. Draw the possible isomers.

15. $CH3 — Br + Na \xrightarrow{dry\ ether} A$

Identity A and give the name of reaction.

C *Answer any* **Eight** *from 16 - 26. Each carries* **3** *marks.*

16. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96. What are the empirical formula and molecular formula of the compound?

17. Write any two Postulates of Bohr model. [2]

b) Write one demerit of Rutherford's model. [1]

18. a) State Heisenberg's Uncertainty Principle. [1]

b) Calculate the uncertainty in velocity of an electron if its uncertainty in position is 100 pm. (Mass of electron is 9.1×10^{-31} kg) [2]

19. N^{3-}, O^{2-}, F^{-}, Na^{+}, Mg^{2+}, Al^{3+}

a) What is common in them? [1]

b) Arrange them in the order of increasing ionic radii [2]

20. Which has greater dipole moment NH_3 or NF_3? Explain.

21. a) State Hess's law of constant summation. [1]

b) Calculate the Standard enthalpy change if

$CH_{4\,(g)} + 2O_{2\,(g)} \rightarrow CO_{2\,(g)} + 2H_2O_{\,(l)}$

Standard enthalpy of formation of CH_4 is –78.4 kJ/mol, CO2 is –393.5 kJ/mol and H_2O is –285.8 J/mol respectively. [2]

22.a) State Le-chatelier principle. [1]

b) $N_{2\,(g)} + 3H_{2\,(g)} \rightleftharpoons 2NH_3\,(g)$; $\Delta H^{-} + -81.8$kJ/mol.

What is the influence of temperature and pressure to get maximum yield of Ammonia. [2]

23. a) Write the injugate acid – base pair of

i) H_2O ii) HSO_4^- [1]

b) Calculate the pH of 0.01 M Solution of HCl acid. [2]

24. a) What is Lassaignes Extract? [

b) How will you detect the presence of Nitrogen in an organic compound ? [2]

25. a) Differentiate electrophiles and nucleophiles with suitable example. [2]

b) Hyper unjugation is known as no bond resonance. Why? [1]

26. a) What is **cis** and **trans** isomerism? [1]

b) Draw the structures of **cis** and **trans** isomers of But-2-ene. [2]

D ***Answer any* 4 *from 27 – 31. Each carries* 4 *marks*** [4 × 4 =16]

27. Explain the four quantum numbers.

28. a) Write down the postulates of VSEPR theory. [2]

b) Explain the structure of NH_3 using hybridisation. [2]

29. a) Write Gibb's - Helmholtz equations. [1]

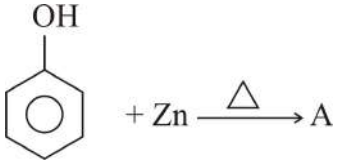
b) Under what conditions a process becomes spontaneous according to this equation. [3]

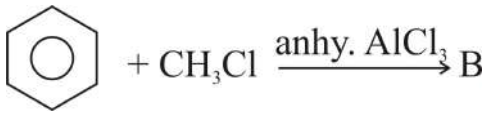
30. a) NH_3 is a Lewis base. Why? [1]

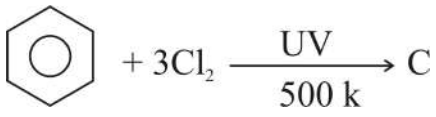
b) Define buffer solution. [1]

c) Classify buffer solution with examples. [2]

31. Complete the following reaction. Name the product.

a) 

b) 

c) 

d) $CH_3 — CH = CH_2 + HBr \rightarrow$ Major product. [4×1=4]

***