

## First year higher secondary examination

Part-3

Time:2 Hours

Cool-off time:15 Minutes

### CHEMISTRY

Maximum:60 Scores

**Answer any 4 questions from 1 to 5.Each carries 1 score(4x1=4)**

1. Write the total number of nodes in 2P orbital?

2. Hybridisation of C in  $\text{CH}_2 = \text{CH}_2$  is \_\_\_\_\_

3. Which of the following is not an extensive property?

a) Mass

b) Internal energy

c) Enthalpy

d) Temperature

4. Write conjugate base of  $\text{HCO}_3^-$ ?

5. Which of the following method is used for the separation of Aniline and water mixture?

a) Steam distillation

b) Simple distillation

c) Crystallisation

d) Sublimation

**Answer any 8 questions from 6 to 15. Each carries 2 scores.(8x2=16)**

6. NO & NO<sub>2</sub> are two oxides of nitrogen

a) Which law is illustrated here?

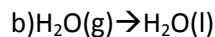
b) State the law

7. What are the limitations of Bohr atom model?

8. Electron gain enthalpy of Cl is more negative than that of F. Give reason.

9. Write any two postulates of VSEPR Theory.

10. Predict which of the following, entropy increases or decreases



11. The concentration of  $\text{H}^+$  ion sample of soft drink is  $3.8 \times 10^{-3} \text{M}$ . Find  $\text{pH}$ .

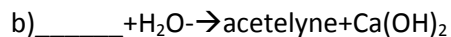
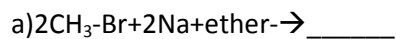
12. Write stock notation of a)  $\text{MnO}_2$     b)  $\text{AgCl}$

13. Write the formula of following compounds.

a) 2,3-dimethyl pentane

b) 2-methyl-pentan-1-ol

14. Complete the following.



15. Draw Newmann projection formula of eclipsed and staggered conformation of ethane.

**Answer any 8 questions from 16 to 26. Each carries 3 scores. (8x3=24)**

16. What are the observations in photo electric effect?

17. What are the wavelength of a photon emitted during a transition from  $n=4$  state to  $n=2$  state in the hydrogen atom?

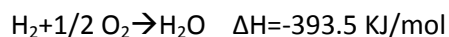
18. a) State modern periodic law.

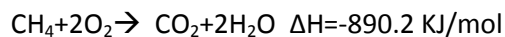
b) Write IUPAC name of element with atomic number 120.

c) Define isoelectronic species

19. In order to explain the geometric shape of molecules the concept of hybridization was introduced. Explain  $\text{sp}^3$  hybridisation with example.

20. Calculate the standard enthalpy of formation of  $\text{CH}_4$  from following data:

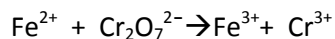




21.a) Write Gibbs-Helmholtz equation?

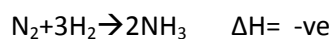
b) What are conditions of spontaneity of reaction?

22. Balance the following reaction (acidic medium)



23.a) State Lechatlier principle

b) What are effect of temperature and pressure in the manufacture of  $\text{NH}_3$  based on following equation?



24. Write all the possible isomers of  $\text{C}_5\text{H}_{12}\text{O}$

25. Write notes on

a) Friedel craft reaction

b) Aromatisation

c) Ozonolysis

26. Define ionisation enthalpy. How ionisation energy varies in the periodic table?

a) Along a period

b) Down a group

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

**(4x4=16)**

27. An organic compound contains 24.27% of C, 40.1% of H and 71.65% of Cl. Its molar mass is 98.96g. What are its empirical and molecular formula? (atomic mass of C=12, H=1, Cl=35.5)

28. Write molecular orbital electronic configuration of  $\text{O}_2$  molecule and find its bond order and predict magnetic property.

29.a) Define Buffer solution?

b) What are different types of Buffer solution.

c) Solubility product of AgCl is  $1.6 \times 10^{-10}$ . Find its solubility.

30. Explain the following.

a) Inductive effect

b)Resonance effect

31.a)Is Benzene aromatic?Give reason.

b)State Huckles rule.

c)Write names of 4 quantum numbers.