

CHEMISTRY HSSC-I
SECTION-A (Marks 17)
Time allowed: 25 Minutes

Note: Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the invigilator. Deleting/ overwriting is not allowed. Do not use lead pencil.

Q -1: Encircle the correct option. Each part carries one mark.

1. 760 torr are equal to pascal.
A) 760 pascal
B) 101325 pasc
C) 1.01325 pascal
D) One pascal
2. Which gas is more ideal at S.T.P.
A) SO₂
B) H₂S
C) NH₃
D) H₂
3. The geometry of PF₅ molecule is:
A) Planar
B) Square planar
C) Trigonal bipyramidal
D) Tetrahedral
4. Greater the dipole moment:
A) Greater is the ionic nature
B) Lesser is polarity
C) Smaller is the ionic nature
D) None
5. Balmer series lies in:
A) Visible region
B) IR region
C) UV region
D) None of these
6. The splitting of spectral lines in electrical field is called:
A) Zeeman effect
B) Stark effect
C) Photoelectric effect
D) Compton effect
7. What volume does 0.80 moles of nitrogen gas occupy at S.T.P?
A) 15.95dm³
B) 16.95dm³
C) 17.93dm³
D) 20.93dm³
8. The unit of surface tension is:
A) Newton per metre
B) Newton per metre square
C) 760mm of Hg
D) Newton square per metre
9. In which of the following are the particles most disordered?
A) Water at 100°C
B) Steam at 100°C
C) Impure water at 102°C
D) Water at 10°C
10. Lattice energy is also called:
A) Crystal energy
B) Ionization energy
C) Energy of affinity
D) Bond energy
11. Iron act as an electrical conductor due to:
A) Electron cloud
B) Free protons
C) Free neutrons
D) Free ions
12. What is the PH of 0.062 M NaOH solution?
A) 3
B) 7.0
C) 9
D) 12.78
13. NaCN is a:
A) Neutral salt
B) Acidic salt
C) Basic salt
D) Buffer
14. Water cannot act as:
A) Lewis acid
B) Lewis base
C) Bronsted acid
D) Bronsted base
15. Reactions with high activation energy are usually:
A) Fast
B) Slow
C) Exothermic
D) Reversible
16. If dry citric acid crystals are placed on dry litmus paper they will:

- A) Turn yellow
 - B) Turn green
 - C) Turn red
 - D) Remains unchanged
17. What is the mass of one mole of iodine molecules?
- A) 254g
 - B) 74g
 - C) 106g
 - D) 127g

CHEMISTRY HSSC-I

Time allowed: 2:35 Hours

Total Marks Section B and C: 68

NOTE: Answer any FOURTEEN parts from Section B and any two questions from Section C on the separately provided answer book. Use supplementary answer sheet i.e. Sheet B if required. Write your answers neatly and legibly.

SECTION-B (Marks 42)

Q-2: Attempt any FOURTEEN parts. The answer to each part should not exceed five to six lines. [14×3=42]

- i. Define yield. Why actual yield is always less than theoretical yield?
- ii. Point out defects of Bohr Model.
- iii. What is n+l rule? Why is 4s orbital lower in energy than 3d orbital?
- iv. Magnesium metal reacts with sulphur to produce MgS. How many grams of MgS can be made from 1.50g of Mg and 1.50g of S by the reaction.
$$\text{Mg} + \text{S} \rightarrow \text{MgS}$$
- v. What is Isomorphism and polymorphism? Give examples.
- vi. Define Hydrogen bonding? Give its three applications.
- vii. How much energy is required to make electron of H-atom to jump from n=2 to n= 4.
- viii. Differentiate between ionic crystals and covalent crystals. (any three).
- ix. What is relationship between K_a and K_b ?
- x. Explain the shape of Ethene molecule on the basis of hybridization.
- xi. What are London Dispersion Forces? How these are produced?
- xii. What is levelling effect? Give example.
- xiii. How Temperature and Intermolecular forces affect Surface tension?
- xiv. State Dalton's Law of partial pressure. Give any two practical applications of this law.
- xv. Prove that $K.E.T.$
- xvi. Explain effect of concentration, temperature and surface area on reaction rates?
- xvii. Calculate any two numerical values of general gas constant (R).
- xviii. What are zero order and first order reactions? Give examples.
- xix. 23g of sodium and 238g of uranium have equal number of atoms in them.
- xx. Calculate wave number for balmer series.

SECTION-C (Marks 26)

Note: Attempt any TWO Questions. Each carries equal marks. [2×13=26]

Q-3:

- a) What is Buffer Solution? How many types of buffer are there? How buffer act? (1+2+4)
- b) Molecular orbital theory can explain the magnetic character of O_2 , O_2^{2+} , O_2^- species. (6)

Q-4:

- a) Derive an equation for calculation of energy of nth orbit of Hydrogen atom. (7)
- b) State Le-Chatelier's principle. Give its industrial application. (1+5)

Q-5:

- a) Explain the structure of NaCl keeping in view the unit cell? (5)
- b) Explain following unique properties of water due to Hydrogen Bonding : (2*4=8)

- a) High surface tension. ii) High specific heat
- c) High boiling point. iv) High heat of vaporization