11th Chemistry - Question Bank for Inorganic Chemistry

1. Chemical Calculations

3 Marks (Book Inside)
1. Define formula weight (FW) or formula mass.
2. Define Avogadro’s number ($N_A$).
3. Define mole.
4. Define molar mass.
5. Define Empirical formula (or) simplest formula.
6. What are the steps used to write the empirical formula.
7. Define molecular formula.
8. What are the steps to write the molecular formula?
9. What is oxidation reaction?
10. What is reduction reaction?
11. Define oxidation in terms of electronic concept.
12. Define reduction in terms of electronic concept.
13. Define oxidation number (or) oxidation state.
15. Define strength.
17. Define Normality.
18. Define molality.
19. Define mole fraction.
20. Define the law of volumetric analysis.
21. Write a note on determination of equivalent masses of elements by Hydrogen displacement reaction.
22. What are the uses of volumetric law?
23. Write a note on equivalent mass of acid.
24. Write a note on equivalent mass of base.
25. Write a note on equivalent mass of salt.
26. Write a note on equivalent mass of an oxidizing agent.
27. Write a note on equivalent mass of an reducing agent.
5 Marks (Book Back)
1. Can two different compounds have same molecular formula? Illustrate your answer with two examples.
2. What are the essentials of a chemical equation?
3. What is the information’s conveyed by a chemical equation?
4. Balance the following equations.
   i. Fe + H₂O → Fe₃O₄ + H₂
   ii. Fe₂(SO₄)₃ + NH₃ + H₂O → Fe(OH)₃ + (NH₄)₂ SO₄
   iii. KMnO₄ + H₂SO₄ → K₂SO₄ + MnSO₄ + H₂O + O₂
   iv. K₂Cr₂O₇ + H₂SO₄ → K₂SO₄ + Cr₂(SO₄)₃ + H₂O + O₂

5 Marks (Book Inside)
1. Explain the determination of molecular mass by Victor – Meyer’s method.
2. Explain the determination of equivalent mass of elements by oxide method.
3. Explain the determination of equivalent mass of elements by chloride method.
4. Write a note on equivalent mass of oxidizing agent & reducing agent.
5. Write a note on equivalent mass of the (a) acid (b) base (c) salt.
6. Mention the rules for writing stoichiometric equation.
7. What are the general rules for assigning oxidation number to an atom?
8. Write the rules for balancing redox reaction by oxidation number method.

2. General Introduction to Metallurgy

3. Marks (Book Back)
1. Distinguish between ore and mineral with suitable example?
2. What are the elements obtained from sea water source?
3. What are the different methods of concentration of ores?
4. What is gravity separation?
5. Name the ores which are concentrated by froth floatation process.
7. What are the major steps involved in the metallurgical process?
8. What is calcinations? Give example.
9. What is the principle involved in Bessemer process?
10. What is meant by electrolytic refining? Give example.
11. What is anode mud?
12. What do you understand by the following terms (i) roastin (ii) smelting

(Book Inside) -----------------------------------------------------------------------------------------------
13. Distinguish between ore and mineral with suitable example?
14. What are the elements obtained from sea water source?
15. What are the different methods of concentration of ores?
16. What is gravity separation?
17. Name the ores which are concentrated by froth floatation process.

18. Define Metallurgy.
19. What are the major steps involved in the metallurgical process?
20. What is calcinations? Give example.
21. What is the principle involved in Bessemer process?
22. What is meant by electrolytic refining? Give example.
23. What is anode mud?
24. What do you understand by the following terms (i) roasting (ii) smelting?
25. What is matrix (or) gangue?
27. Define ores. Give one example.
29. Give any six names of sulphide ores with composition.
30. Give any three names of carbonate ores with composition.
32. Give any three names of sulphate ores with composition.
33. Give any three names of silicate ores with composition.
34. Write descending mass abundance of the elements in Humans.
35. Write descending mass abundance of the elements in Oceans.
36. Write descending mass abundance of the elements in Earth crust.
37. What is acidic Bessemer process?
38. What is Basic Bessemer process?
39. Give any six metals which are purified by electrolytic refining.
40. What are the metals purified by Zone refining method?
41. Write a note on Mond’s process.

5 Marks (Book Back)
1. Write short note on source of element in living system.
2. Explain froth flotation process with neat diagram.
3. How electrolytic separation process is useful in the separation of magnetic impurities from nonmagnetic ores? Draw the diagram.
4. How the impurities of ore are removed by chemical method?
5. What is roasting? Explain different types of roasting with suitable example.
6. What is smelting? Explain the process with example.
7. What is Zone refining? Describe the principle involved in the purification of the metal by this method.
8. How nickel is extracted by Mond’s process? Write the various reactions involved in the process.
9. Write short note on mineral wealth of India.
10. Give a brief account of the mineral wealth of Tamil Nadu.

(Book Inside) -----------------------------------------------------------------------------------------------------------------------------------------
11. Explain the Electrolytic refining of Copper.

3 Marks (Book Back)
1. What is the charge of an electron, proton and neutron?
2. What is atomic number?
3. What is the maximum number of electrons that an orbital can have?
4. How many orbital’s are there in the second orbit? How are they designated?
5. Sketch the shape of s and p-orbital indicating the angular distribution of electrons.
6. What are the charge and mass of an electron?
7. What is an atomic number?
8. Give the order of filling of electrons in the following orbital’s 3p, 3d, 4p, 4s and 6s.
9. What is meant by principal quantum number?
10. How many protons and neutrons are present in 8O18?
11. What are the particles generally present in the nuclei of atoms?
12. The atomic mass of element is 24 and its atomic number is 12. Show how the atom of the element is constituted?
13. How will you experimentally distinguish between a ray of neutron and ray of proton?
14. What is the principal defect of Bohr atom model?
15. Write the complete symbol for (a) The nucleus with atomic number 56 and mass number 138, (b) The nucleus with atomic number 26 and mass number 55, (c) The nucleus with atomic number 4 and mass number 9.
16. An atomic orbital has n=3. What are the possible values of l?
17. An atomic orbital has l=3. What are the possible values of m?
18. Give the electronic configuration of chromium (Z=24).
19. Which energy level does not have p-orbital?
20. An atom of an element has 19 electrons. What is the total number of p-orbital?
21. How many electrons can have +½ in a d-sub-shell?
22. Write the values of l and m for p-orbital.
23. Which quantum accounts for the orientation of the electron orbital?
24. What is the shape of the orbital with (i) n=2 and l=0; (ii) n=2 and l=1?
25. Give the values for all quantum numbers for 2p electrons in nitrogen (Z=7).
27. Explain why the electronic configuration of Cr and Cu are written as 3d⁵ 4s¹ and 3d¹⁰ 4s¹ instead of 3d⁴ 4s² and 3d⁹ 4s²?

(Book Inside) -------------------------------------------------------------------------------------
28. Write a note on Thomson’s model of an atom.
29. What is Rutherford’s alpha (α )-rays scattering experiment?
30. Define atomic mass.
31. Define Orbit.
32. What is stationary state?
33. State Heisenberg uncertainty principle.
34. What is Zeeman Effect?
35. What is Stark effect?
36. Define Quantum number.
37. What are the types of Quantum number?
38. Write a note on principal quantum number.
39. Write a note on azimuthal (or) subsidiary quantum number.
40. Write a note on Magnetic Quantum number.
41. Write a note on Spin Quantum number.
42. Write a note on shape of s – orbital.
43. Write a note on shape of p – orbital.
44. Write a note on shape of d – orbital.
45. Define Pauli’s exclusion principle.
46. Define Hund’s rule of maximum multiplicity.
47. What is (n+ l) rule.
48. Write a note on stability of orbital.

5 Marks (Book Back)

1. Describe Aufbau principle .Explain its significance in the electronic buildup of atoms.
2. Using the s,p,d, notation, describe the orbital with the following quantum numbers?(a)n=1,l=0;(b)n=2,l=0;(c)n=3,l=1; (d)n=4,l=3.
3. Using the a Aufbau principle, write the electronic configuration in the ground state of the following atoms : Boron(Z=5)Neon(Z=10) and Aluminium (Z=13).
4. What is Rutherford’s alpha (α )- ray scattering experiment? What are its conclusions?
5. What are the postulates of Bohr Theory of an atom?
6. Explain the various quantum numbers which completely specify the electron of an atom.

(Book Inside)-------------------------------------------------------------------------------------------------------------------------------

7. Explain the defect of Rutherford’s model.
8. Give any five limitations of Bohr’s model of an atom.
9. Explain the shape of s, p – orbital.
10. Explain the shape of d – orbital.
11. Explain the Pauli’s exclusion principle with some examples.
12. Explain the Hund’s rule of maximum multiplicity with some examples.

4. Periodic classification – I

3 Marks(Book Back)

1. Arrange F,Cl, Br and I in the order of increasing electronic gain enthalpy.
2. Write electronic configurations for the elements of atomic numbers 6 and 14 and from this find out of which group in the periodic table each elements belongs.
3. Which of the following electronic configurations has the lowest ionization enthalpy(a)1s^2,2s^2,2p^6,(b)1s^2,2s^2,sp^6;(c)1s^2,2s^2,2p^6,3s^2 .
4. State Modern Periodic Law.
5. Why Noble gases have zero electron gain enthalpy?
6. Which of the following pairs of elements would you expect to have lower first ionization enthalpy? (a)Cl or F; (b)Cl or S; (c)K or Ar; (d)Kr or Xe.
7. Why do elements in the same group have generally similar properties?
8. Name any two transition elements and any two inner transition elements.
9. Arrange the order of increasing atomic volumes in: (a) Li, Na and K; (b) C, N and O; (c) Ca, Sr and Ba.
10. Name the different blocks of elements in periodic table. Give the general electronic configuration of each block.
11. To which block does the element with configuration $3d^{10}4s^2$ belong?
12. Why nitrogen has higher I.E. value than oxygen?
13. Out of fluorine and chlorine, which has greater electron gain enthalpy?
14. Why d-block elements are called transition elements?
15. What property did Mendeleev use to classify elements in his periodic table?
16. Among the elements Li, K, Ca, S, and Kr which one has the lowest first ionization enthalpy? Which has the highest first ionization enthalpy?

(Book Inside) 
17. Write a note on Dobereiner’s triads.
18. Write a note on Newland law of octaves.
19. Write a note on Lother Meyer’s arrangement of elements.
20. Define Mendeleev’s periodic law.
21. Write a note on s – block elements.
22. What are representative (or) Main group elements?
23. What are inner transition elements?
24. Write the general electronic configuration of s, p, d, f, block elements.
25. What are metalloids (or) semi metals?
26. Arrange the following in the order of increasing metallic character.
   Be, Mg, Na, Si, P.
27. Define atomic radii.
29. Define Ionisation energy (or) Ionisation potential.
31. Which of the following will have the largest and smallest size, Mg, Mg$^{+2}$, Al, Al$^{+3}$.
32. What are the factors will affect the Ionisation energy.
33. Define electron affinity (or) electron gain enthalpy.
34. What are the factors will affect the electron affinity.
35. Define electronegativity.
36. Why Ionisation energy of B is less than that of Be.
37. Why Ionisation energy of Be, Mg, N & P are higher.
38. Why electron affinity of Be & Mg are zero.

5 Marks (Book Back)
1. Why does the first ionization enthalpy would have higher electron gain enthalpy?
2. Which of the following pairs of elements would have higher electron gain enthalpy? (a) N or O; (b) F or Cl. Explain.
3. Lanthanides and actinides are placed in separate rows at the bottom of the periodic table. Explain the reason for this arrangement?
4. What do you mean by representative elements? Name the groups of the periodic table, which contain representative elements.
5. Define transition elements. Name the different transition series.
6. Which elements of the following pairs have smaller ionization enthalpy? (a) Ca or Be; (b) Ca or K; (c) Cl or I. Justify your answer.
7. Why is Na atom bigger than the atoms of both lithium and magnesium?
8. What do you mean by the term electron gain enthalpy? How does electron gain enthalpy change along a period and in a group?
9. Explain how the elements are arranged in the form of the periodic table.
10. What are normal, transition and inner-transition elements?
11. What are the differences between normal and transition elements?
12. Explain why radii of positive ions are always smaller than the radii of corresponding neutral atoms and why negative ions have larger radii than the corresponding neutral atom.
13. Explain the size of group Cl⁻ > Na⁺.
14. What is electron gain enthalpy? On what factors does it depend?
15. Give the general variation of electron gain enthalpies in the periodic table.
16. Define the term ionic radius. Justify that the radius of anion is larger than the parent atom.
17. What do you mean by ionization enthalpy? How does it vary across a period and down a group?
18. What is meant by electronegativity? On what factors does it depend?
19. What are the essential features of the periodic table of Mendeleev?
20. Discuss how his table has been modified subsequently.

(Book Inside) 3 Marks (Book Back)

1. What are isotopes? Mention the isotopes of hydrogen.
2. Write a short note on tritium.
3. How does deuterium react with nitrogen?
4. How does deuterium react with metals?
5. Mention the uses of deuterium.
6. How is tritium prepared?
7. How do you convert para hydrogen to ortho hydrogen?
8. How does heavy water react with metals?
9. How is hydrogen peroxide prepared in the laboratory?
10. How is hydrogen peroxide solution concentrated?
11. Write about the reducing property of hydrogen peroxide.
12. Mention two important uses of H₂O₂.
13. Why alkali metals have low melting and boiling points?

14. Why alkali metals have strong electropositive character?  
(Book Inside)  
15. Write short note on protium (or) ordinary hydrogen.  
16. Write a note on Deuterium (or) heavy hydrogen.  
17. Write a note on preparation of Deuterium by electrolysis of heavy water.  
18. How does Deuterium react with oxygen & nitrogen?  
19. How does Deuterium react with halogens?  
20. Write any three exchange reaction of Deuterium.  
21. Mention the uses of Tritium.  
22. Write a note on ortho hydrogen.  
23. Write a note on para hydrogen.  
24. What is heavy water?  
25. How does heavy water react with metallic oxide?  
26. How does heavy water react with acid anhydride?  
27. How does heavy water react with metal carbide?  
28. Write a note on electrolysis of D₂O.  
29. Give two examples for exchange reaction of heavy water.  
30. Write about the oxidizing properties of H₂O₂.  
31. How hydrogen is obtained from the other energy source.  
32. Give any three general characteristic of alkali metals.  
33. Why alkali metals show oxidation state of +1?  
34. Write a note on reducing properties of alkali metals.  
35. Mention any three uses of Lithium.  
36. How does sodium react with air?  
37. How does sodium react with H₂O & CO₂?  
38. How does sodium react with HCl & NH₃?  
39. How does sodium react with Alumina & Silica?  
40. Mention any three uses of sodium.  

5 Marks (Book Back)  
1. How is deuterium obtained by diffusion process?  
2. Write about the exchange reactions of deuterium.  
4. Differentiate between ortho and para hydrogen.  
5. Explain the preparation of heavy water.  
6. Compare water and heavy water.  
7. Explain the oxidizing property of hydrogen peroxide.  
8. Explain how liquid hydrogen can be used as a fuel.  
9. How is lithium extracted from its ore?  
(Book Inside)
10. How does Deuterium react with (a) O₂  (b) N₂  (c) halogens  (d) Na  (e) C₂H₄
11. Write a note on preparation of Tritium.
12. How do you convert para hydrogen to ortho hydrogen?
13. How does heavy water react with (a) metal  (b)metallic oxide (c) metal carbide.
14. How does heavy water react with (a) SO₃  (b) P₂O₅  (c) NaOH  (d) NH₄Cl.
15. Explain the laboratory preparation of H₂O₂?
16. Mention any five general characteristics of alkali metals.
17. Write a note on (a) Electropositive character (b) Oxidizing state (c) Reducing properties of alkali metals.
18. Mention any five uses of Lithium.
19. How does sodium react with (a) O₂  (b) H₂O  (c)CO₂
20. How does sodium react with (a) NH₃  (b) HCl  (c) Alumina (d) Silica.
21. Mention any five uses of Sodium.

6. Group 2s – Block Elements

3 Marks (Book Back)
1. Why the oxides of Group 2 metals have high melting points?
2. Why there is increase in the ionisation potential for forming M³⁺ ion for group 2 metals?
3. Why the ionization potential of M²⁺ is not very much greater than M⁺?
4. Why a precipitate of Mg(OH)₂ is not formed when aqueous ammonia, NH₄OH is added to a solution of MgCl₂?
5. List the carbonates and hydroxide of alkaline earth metals in order of their increasing stability and their solution.
6. Why do beryllium halides fume in air?
7. Why group 2 elements are harder than alkali metals?
8. Beryllium halides are covalent whereas magnesium halides are ionic.Why?
9. Why monoxides of alkaline earth metals are are very stable?
10. The basic strength of the oxides of group 2 elements increases from Be to Ba. Why?

(Book Inside) -------------------------------------------------
11. What are alkaline earth metals?
12. Write the electronic configuration of Sr, Ba, Ra.
13. Write a note on metallic properties of alkaline earth metals.
14. Write a note on atomic radius of alkaline earth metals.
15. Write a note on ionic radius of alkaline earth metals.
16. Write a note on Ionization energy of alkaline earth metals.
17. Write a note on Oxidation state of alkaline earth metals.

18. Mention the flame colouration of alkaline earth metals.
19. Mention any three ores of Magnesium & its formula.
20. How does Magnesium react with N₂ & O₂.
21. How does Magnesium react with CO₂ & H₂O.
22. What is the action of HNO₃ on Magnesium?
23. How does Magnesium react with AgNO₃?
24. How does Magnesium react with K₂O & B₂O₃?
25. Mention any two uses of Magnesium.
26. How will you prepare Epsom salt?
27. Mention the uses of Epsom salt.
28. Write the preparation of quick lime.
29. How does quick lime react with H₂O & HCl?
30. Mention any three uses of quick lime.
31. How will you prepare Gypsom?
32. Mention the uses of Gypsom.
33. Mention the uses plaster of Paris.

5 Marks (Book Back)
1. What are alkaline earth metals? Why are they called so?
2. In what respects Be and Mg differ from all the other metals of group 2.
3. How can you explain the anomalous behaviour of beryllium.
4. How does magnesium occur in nature? How is the metal extracted from its Ore?
5. In the light of metallic bonding account for the following properties of group 2 elements.
   i. These are harder than alkali metals
   ii. These are good conductors of heat and electricity.
6. Why the first ionization energy of alkaline earth metals higher than that of 1st group.
7. Mention the uses of plaster of Paris.
8. How is plaster of paris prepared?
9. How is MgSO₄ prepared?
10. Mention the uses of Magnesium?

(Book Inside) -------------------------------------------------------------------------------------------------------
11. How does Magnesium react with (a) HNO₃ (b) AgNO₃ (c) B₂O₃ (d) K₂O.
12. How does Magnesium react with (a) N₂ (b) CO₂ (d) H₂O.
13. Write a note on preparation of Gypsom, Epsom, Quick lime.
7. p – Block Elements

3 Marks (Book Back)
1. Mention the reasons for the stabilisation of lower oxidation state of p-block element.
2. Show the electron accepting property of boron trifluoride by giving an example.
3. Give an example of monovalent and trivalent element in group III.
4. Why diamond is hard compared with graphite?
5. Why Boron family has a tendency to form hydrides?
6. Boron does not form B$^{3+}$ ion. Why?
7. Why NH$_3$ has high boiling point than PH$_3$?
8. NH$_3$ is soluble in water whereas other hydrides of group 15 elements are insoluble in water. Why?
9. Which is considered to be "earth’s protective umbrella"?
10. Mention any 3 uses of ozone.
11. What are CFC’s? Mention its environmental action.
12. What are compound oxides? Give an example.
13. Mention the metal ions present in haemoglobin and myoglobin and state its function.
14. What happens when ozone reacts with
   a) lead sulphide   b) potassium manganate
(Book Inside) --------------------------------------------------------------
15. What are p – Block elements?
16. What is inert pair effect?
17. What are the types of oxides of p – Block elements? Give each one example.
18. Write a note on acidic & basic character of p – Block elements down the group & across a period.
20. How will you prepare Borax from Colemanite?
21. Write a note on preparation of Boron trioxide.
22. Give one example for reduction of B$_2$O$_3$.
23. How does Boron react with O$_2$, N$_2$ & CO$_2$?
24. How does Boron react with HNO$_3$, & H$_2$SO$_4$?
25. How does Boron react with SiO$_2$?
26. How does Boron react with non- metals?
27. How does Boron react with metals?
28. How Borax (or) Sodium tetra Borate is obtained from Colemanite?

29. How does Borax obtained from Tincal?
30. What is the action of heat on Borax?
31. Mention any three uses of Borax.
32. Write a note on Borax beads test.
33. Write the reaction to get blue beads of Copper in an oxidizing flame.
34. Write the reaction to get red beads of Copper in a reducing flame.
35. Mention the Colours of Cu, Mn, Co, Cr & Ni in an oxidizing flame.
36. Mention the Colours of Cu, Mn, Co, Cr & Ni in reducing flame.
37. Give any three allotropic form of Carbon.
38. Mention the different amorphous varieties of Carbon.
39. Draw the tetrahedral structure of diamond.
40. Draw the structure of Graphite.
41. Write a note on fullerenes (or) buckyball.
42. How does silica obtained from
43. What are carbides? Give one example.
44. What are the types of carbides? Give one example for each.
45. Write any three preparations of Carbides.
46. Give any three uses of carbon & its compounds.
47. Write the formula for saltpetre & Chile saltpetre.
48. What is combined (or) fixed Nitrogen.
49. Write a note on Nitrogen fixation in nature.
50. What is Nitrogen cycle?
51. Mention the three uses of Nitrogen compounds.
52. Write a note on laboratory preparation of Nitric acid.
53. What are Chalcogens?
54. Write any two importance of molecular oxygen (or) Dioxygen.
55. Write a note on preparation of nascent oxygen from molecular oxygen.
56. Write a note on formation of molecular oxygen.
57. Write a note on formation of Ozone.
58. What are acid anhydrides?
59. How does water react with B₂O₃ & SO₃?
60. How does water react with P₂O₅ & N₂O₅?
61. Give any three examples for acidic oxides.
62. Give any three examples for basic oxides.
63. What are amphoteric oxides? Give an example.
64. How does Zinc oxide react with strong base & strong acid?
65. Give any three examples for peroxides.
66. How does lead oxide react with HCl?
67. What are neutral oxides? Give three examples.
68. Give two examples for dioxide 
69. What is ozone? Give its colour & magnetic character.
70. What is Ozoniser? Give one example.
71. Why Ozone acts as a powerful oxidizing agent?
72. Give two examples for oxidizing action of ozone.
73. How does ozone react with BaO₂ & H₂O₂?
74. Draw the resonance hybrid structure of ozone.
75. Write a note on Ozone layer.
76. What are the factors will affect the ozone layer.

5 Marks (Book Back)
1. Explain inert pair effect with suitable example.
2. Give an account of nature of hydrides of 15th group elements.
3. How is boron extracted from borax?
4. What happens when boron reacts with a) conc.H₂SO₄     b) conc.HNO₃     c) SiO₂
5. How is borax prepared from colemanite?
6. How borax bead test is helpful in identifying basic radicals in qualitative analysis?
7. Discuss the structural difference between diamond and graphite.
8. Write a short note on fixation of nitrogen.
9. How nitric acid is prepared by ostwald process.
10. Why silicon carbide is used as an abrasive?
11. How molecular oxygen is important for all oxygenated animals?
12. How ozone reacts with the following (a) PbS (b) KmnO₄

(Book Inside) -----------------------------------------------
13. Explain the manufacture of ammonia by Haber’s process.
14. Mention the uses of Nitrogen compounds.
15. What is ozoniser? Write short note on Siemen’s ozoniser.

Question Bank for Physical Chemistry
8. Solid State – I

3 Marks (Book Back)
1. What is mean by unit cell in crystallography?
2. How many types of cubic unit cell exits?
3. What are Miller indices?
4. Mention the number of sodium & Chloride ions in each unit cell of NaCl.
5. Mention the number of Cesium & Chloride ions in each unit cell of CsCl.
(Book Inside) -----------------------------------------------
7. Define amorphous solids. Give an example.
8. What is long range order?
9. What is isotropic? Give an example.
10. What is anisotropic? Give an example.
11. Define double refraction.
12. What is micro crystalline? Give an example.
14. What are classes of unit cell?
15. Write a note on simple cubic (s.c) unit cells.
16. Write a note on body centred cubic (b.c.c) unit cells.
17. Write a note on face centred cubic (f.c.c) unit cells.
18. Write the procedure for determining the miller indices for a plane.
19. Calculate the miller indices of crystal plane, which cut through the crystal axes at
   1. (2a,3b,c)  2. (a,b,c)  3. (6a,3b,3c)  4. (4a,2b,3c)  5. (2a,-3b,-3c)  6. (2a,4b,3c)
   7. (2a,2b,c)  
20. How do the spacing of the three planes (100), (110), (111) of the cubic lattice vary.

5 Marks(Book Back)

1. Define and explain the following terms. a) Crystalline solids  b) amorphous solids 
   c) unit cells.
2. Give the differences between crystalline solids & amorphous solids.
3. Explain the terms isotropic & anisotropics.
4. What is the difference between bcc &fcc.
5. Draw a neat diagram for sodium chloride structure and describe it accordingly.
6. Draw a neat diagram for Cesium chloride structure and describe it accordingly.

(Book Inside) -------------------------------------------------------------------------------------------------------------------------------------
7. Draw the sketch for the following planes. (100), (010), (001), (110), (101), 
   (011), (111).

9. Gaseous State - I

3 Marks(Book Back)

1. Write the mathematical expression for Boyle’s law.
2. Compare the partial pressures of gases A and B when 3 moles of A and 
   5 moles of B mixed in constant volume, and 250°C and 1 atm pressure.
3. Give the correction factors for the volume and pressure deviation for a 
   Vanderwaal’s gas.

4. A sample of an ideal gas escapes into an evacuated container, there is no change in the kinetic energy of the gas. Why?
5. What is the change in temperature when a compressed real gas is allowed to expand adiabatically through a porous plug.
7. What are measurable properties of gases?
8. What is the molar volume of nitrogen at 500 K and 600 atm according to the ideal gas law?
10. Give the values of R-gas constant in calories and Joules.
11. What are the units of Vanderwaals constants 'a' and 'b'?
12. Write the significance of Vanderwaal's constants.
13. Write the limitations of the vanderwaal equation of state.
15. What is meant by inversion temperature?

(Book Inside) ---------------------------------------------------------------------------------------------------------------------------------------------------
16. What are the three states of matter?
17. Define pressure.
18. Write a note on standard temperature and pressure.
19. Write three different numerical values of gas constant (R).
21. Derive the equation for the equation state of gaseous mixture.
22. Derive the equation for the calculation of partial pressure.
23. Define Critical temperature (Tc).
24. Define Critical Pressure (Pc).
25. Define Critical volume (Vc).
26. What are the different methods of liquefaction of gases?
27. What are the conditions for liquefaction of gases?

5 Marks (Book Back)
1. Explain the causes for deviation for real gases from ideal behaviour.
2. Deduce the relationship between critical constants and Vanderwaal's constants.
3. Describe Linde's process of liquefaction of gases with neat diagram.
4. Describe Claude's process of liquefaction of gases with neat diagram.
5. What is meant by adiabatic demagnetization? Explain its use in liquefaction of gases.

(Book Inside) ----------------------------------------------------------------------------------------
6. Describe Volume correction of real gases.
7. Describe pressure correction of real gases.
8. Write a note on Critical temperature, critical pressure, & critical Volume.
10. Describe Thomson's isotherms of CO₂?

10. Chemical Bonding

3 Marks (Book Back)
1. Arrange NaCl, MgCl₂ and AlCl₃ in the increasing order of covalent character.
2. Fin the σ and π bonds in the following CH₃-CHO, CH₂=CH₂, CH =CH.

3. Among Na⁺, Ca²⁺, Mg²⁺, Al³⁺ which has high polarizing power?
4. What is the structure of BeCl₂?
5. Write the differences between electrovalent and covalent bonds.
6. Give reason: CCl₄ is insoluble in H₂O while NaCl is soluble.
7. sp³ hybridisation is involved in CH₄, H₂O and NH₃. Why are the bond angles different in three cases?
8. Explain the co-ordinate bond formation between BF₃ & NH₃.
9. What is octet rule? Explain with an example.
10. What are the different types of Chemical bonds?
11. What is meant by ionic (or) electrovalent bond. Explain the bond formation in AlBr₃ and CaO.
12. Give the electron dot representation for PH₃ and ethane.
13. Write the Lewis dot structures for the following. S, S²⁻, P, P³⁻, Na, Na⁺, Al and Al³⁺.
14. What are the important features of valence bond theory?
15. What is meant by hybridization?
16. Define resonance. Give the various resonance structures of CO₂ and CO₃²⁻.

(Book Inside) ----------------------------------------------------------------------------------------------------------------------------------
17. What is chemical bond?
18. What is homonuclear diatomic molecule? Give two examples.
19. What is heteronuclear diatomic molecule? Give two examples.
20. What is homonuclear polyatomic molecule? Give two examples.
21. What is heteronuclear polyatomic molecule? Give two examples.
22. Define Covalent bond. Give an example.
23. Discuss the conditions for write Lewis dot structures.
24. Write the Lewis dot structure for F₂, CO₂ & N₂.
25. Define Lattice (or) space Lattice.
27. What are the important features for lattice enthalpy?
28. Give any three properties of electrovalent (or) ionic compounds.
29. Write the Lewis dot structure of Cl₂, O₂, PH₃.
30. Write the Lewis dot structure for ethane, ethylene, ethyne.
31. Give any three characteristic of covalent compounds.
32. Define Polarization.
33. State Fajan’s rule.
34. Arrange the Li⁺, Na⁺, K⁺, Rb⁺, Cs⁺ in the decreasing order of polarization.
35. Arrange the decreasing covalent character of chloride of Li, Na, K, Rb, Cs.
36. Write the decreasing order of polarization of Halides.
37. Arrange the decreasing covalent character of LiF, LiCl, LiBr, LiI.
38. Write a note on partial ionic character of HCl.
39. Write the abbreviation of VSEPR.
40. Draw the molecular geometry of BeCl₂, BF₃, CH₄.
41. Draw the molecular geometry of HgCl₂, NH₄⁺, PCl₅.
42. Draw the molecular geometry of SF₆.
43. Define lone pair of electron.

44. Define bond pair of electron.
45. Write the descending order of repulsion interaction between lone pair and bond pair.
46. What are the limitations of VB theory?
47. What are the major processes that are considered to occur hybridization of orbitals?
48. Give the resonance structure of O3, CO3²⁻, CO2 & N2O.
49. Give the Kekule’s structure of benzene.
50. Give the Dewar structure of benzene.

5 Marks (Book Back)
1. Discuss the important properties of electrovalent (or) Ionic compounds.
2. Calculate the lattice energy of NaCl using Born-Haber cycle.
3. Explain the important properties of covalent compounds.
4. Discuss the partial covalent character in ionic compounds using Fajan's rule.
5. Explain the polarity of covalent bonds in H2O and HCl.
6. Discuss the shapes of following molecules: NH₃, H₂O, CH₄, PCl₅ and SO₂.
7. Discuss VSEPR model applied for linear, trigonal planar, tetrahedral and octahedral geometries of molecules.
8. Explain the formation and difference between a sigma bond and a pi-bond. Which has more bond strength?
9. Calculate the lattice enthalpy of CaCl₂ given that the enthalpy of:
   i) Sublimation of Ca 121 kJ mol⁻¹
   ii) Dissociation of Cl₂ to 2Cl is 242.8 kJ mol⁻¹
   iii) Ionisation of Ca to Ca²⁺ is 2422 kJ mol⁻¹
   iv) Electrongain for Cl to Cl⁻ is 355 kJ mol⁻¹
   v) ΔH°overall is -795 kJ mol⁻¹

(Book Inside) -----------------------------------------------

10. Write the W. Kossel postulates to understanding of ionic bonding.
11. Explain the Valence Bond (VB) theory.
12. Discuss about the Valence Bond Electron Pair Repulsion (VSEPR) theory.

11. Colligative Properties

3 Marks (Book Back)

1. What are colligative properties?
2. Define relative lowering of vapour pressure.
3. What do you understand by molal elevation of boiling point? What are abnormal solutes?
4. Addition of non-volatile solute always increases the boiling point of the solution. Why?
5. Volatile hydrocarbons are not used in the brakes of automobile as lubricant, but non-volatile hydrocarbon are used as lubricants. Why?
6. Prove that the depression in freezing point is a colligative property.
7. Explain the terms osmosis and osmotic pressure.
8. What are isotonic solutions?
9. What are the advantages of Berkley-Hartley method?
10. Explain how the degree of dissociation of an electrolyte may be determined from the measurement of a colligative property.

(Book Inside) 

11. Define Solute.
12. Define Solvent.
14. What is vapour pressure of the liquid?
15. What is Raoult’s law?
16. What is depression of freezing point of the solution?
17. What is cryoscopic constant (or) molal freezing point depression constant?
18. What is molal boiling point elevation constant (or) ebullioscopic constant?
19. What are the characteristics of Osmotic pressure?
20. Define Boyle’s – Vant Hoff law.
21. Define Charle’s – Vant Hoff law.
22. Write a note on abnormal colligative properties.
23. What is Van’t Hoff factor (i) ?
24. What is elevation of boiling point?

5 Marks (Book Back)

1. Explain the determination of relative lowering of vapour pressure by Ostwald-Walker method?
2. Describe about Beckmann thermometer.
3. Explain the determination of depression in freezing point by Beckmann method.
4. What is elevation of boiling point? Explain its determination by Cottrell’s method.
6. What are abnormal colligative properties? Explain with example and write its determination using Van’t Hoff factor.

(Book Inside) 

7. Explain the lowering of vapour pressure.
8. Explain Raoult’s law.
9. Explain the determination of molecular weight from depression in freezing point.
10. Explain the determination of molecular weight from elevation of boiling point.
11. Explain the determination of molecular weight by Osmotic pressure measurement.

12. Thermodynamics – I

3 Marks (Book Back)
1. Name the equipment using which heat of combustion of compounds are determined?
2. Energy can be created and be destroyed. State whether this is true or false.
3. Define zeroth law of thermodynamics.
4. Give the relation between $\Delta U$ and $\Delta H$.
5. Define an adiabatic process.
6. Write the differences between an exothermic and an endothermic process.
7. What are intensive and extensive properties?
8. Define first law of thermodynamics.
9. Explain thermal and mechanical equilibrium processes.

(Book Inside) --------------------------------------------------
10. Define Thermodynamics.
11. Define system.
12. What are the types of system?
13. What is surrounding?
14. What is Boundary?
15. What is isolated system?
16. What is closed system?
17. What is open system?
18. Write a note on Homogeneous & Heterogeneous system.
19. Write a note on macroscopic properties.
20. What are the types of macroscopic properties?
21. Define state of system.
22. What are state variables (or) state function?
23. Define Chemical equilibrium.
24. Define Isothermal, Isobaric & Isochoric process.
25. Define cyclic process.
26. What is spontaneous & non – spontaneous system?
27. Write a note on reversible & irreversible process.
28. Write the difference between reversible & irreversible process.
29. Write a note on exothermic & endothermic process.
32. What is Work?
33. What are the types of work?
34. Write a note on Gravitational work.
35. Write a note on Electrical work.

36. Write a note on Mechanical work.
37. What is heat? Give its characteristics.
38. Define energy. Give its types.
39. Give the characteristics of energy.
40. Define Enthalpy.
41. Define standard Enthalpy change.
42. Write a note on enthalpy of combustion.
43. Define enthalpy of Neutralization.

5 Marks (Book Back)
1. Describe a bomb calorimeter and explain how heat of formation of an organic compound is determined.
2. Compare the enthalpy changes that occur between the neutralization of a strong acid and a weak acid by sodium hydroxide. Explain the differences seen.

(Book Inside) 5 Marks (Book Back)
3. Define system. Explain the types of system.
4. Explain the types of equilibrium in thermodynamic process.
5. Explain any five thermodynamic processes.
6. Explain the Zeroth law of thermodynamics with example.
7. Write a note on various types of work.
8. Give various types of first law of thermodynamics.
9. Derive the relation between enthalpy (H) & internal energy (U).
10. Derive ∆H = ∆U + ∆n\text{g}RT.
11. What are the conventions are necessarily adopted in a thermo chemical equation.

13. Chemical Equilibrium - I

3 Marks (Book Back)
1. Define law of mass action.
2. Write the Kp expression for dissociation of PCl\text{5}.
3. Relate Kc & Kp when ∆n = 0, ∆n = 1, ∆n = 2.
4. Define irreversible reaction. Give an example.
5. Reason out why equilibrium concentration remains constant.

(Book Inside) 3 Marks (Book Back)
7. Define reversible reaction. Give an example.
8. Write a note on scope of chemical equilibrium.
9. Define dynamic equilibrium.
10. What is equilibrium mixture?
11. What is equilibrium concentration?
12. What are the types of equilibrium in physical processes?
13. Write a note on solid – solid equilibrium.
15. Write a note on solid – liquid equilibrium.
16. What are the types of equilibrium in chemical processes?
17. What is homogeneous equilibrium? Give an example.
18. What is heterogeneous equilibrium? Give an example.
19. Write a note on law of mass action based on the molecular collision theory.
20. Define equilibrium constant.
22. Define mole fraction.
23. What are the factors will affect the formation of HI at equilibrium.
24. What are the factors will affect the dissociation of PCl$_5$ at equilibrium.
25. Write any three characteristics of chemical equilibrium.
26. Write any three characteristics of equilibrium constant.
27. Write Kc & Kp expression for the dissociation of PCl$_5$ & formation of HI.
28. Write Kc & Kp expression for the dissociation of CaCO$_3$ & formation of N$_2$O$_4$.
29. Write Kc & Kp expression for the formation of NH$_3$ & SO$_3$.
30. Write Kc & Kp expression for the dissociation of N$_2$O$_5$ & formation of NO.

5 Marks (Book Back)

1. Differentiate irreversible & reversible reactions.
2. Explain the characteristic of a chemical equilibrium.
3. Write a note on heterogeneous equilibrium.

(Book Inside) ---------------------------------------------------------------

4. Derive Kc & Kp for formation of HI at equilibrium reaction.
5. Derive Kc & Kp for dissociation of PCl$_5$ at equilibrium reaction.
6. Derive the expression for equilibrium constant for general equilibrium reaction.
7. Explain the characteristics of equilibrium constant.
8. Write a note on reversible & irreversible reaction with an example.
9. Explain the nature of chemical equilibrium.
10. Write a note on types of equilibrium in physical processes with an example.
11. Write a note on types of equilibrium in chemical processes with an example.
12. Explain the influence of various factors on the formation of HI at equilibrium reaction.
13. Explain the influence of various factors on the dissociation of PCl$_5$ at equilibrium reaction.
14. Chemical kinetics – I

3 Marks (Book Back)

1. Define half life period.
2. Name the factors that affect the rate of reaction.
3. What is molecularity?
4. What is a rate determining step?
5. List the factors on which an order of the reaction depend.
6. Write the rate law of $pA + qB \rightarrow lC + mD$ reaction.
7. What is fractional order reaction?
8. Define the rate of reaction.
9. Write the rate constant expression for 1st order reaction.
10. Write the rate constant expression for second order reaction $2A \rightarrow$ products.

(Book Inside) -------------------------------------------------------------------------------------------------------------------------------------

11. Define rate law.
12. Define rate constant.
13. Define order of the reaction.
14. Give the units of rate.
15. Write the general formula for unit of rate constant.
16. Give the unit for rate constant for Zero, first, second & third order reaction.
17. Give the example for first, second, & third order reaction.
18. Give the example for zero & fractional order reaction.
19. Write a note on Nature of reactant & product which influence the rate of reaction.
20. Write a note on concentration of reacting species which influence the rate of reaction.
21. Write a note on temperature of the system which influences the rate of reaction.
22. Write a note on presence of catalyst which influences the rate of reaction.
23. Write a note on surface area of reactants which influence the rate of reaction.
24. Write a note on Exposure to radiation which influences the rate of reaction.

5 Marks (Book Back)

1. Compare and contrast the terms, order and molecularity of are action.
2. Describe the factors on which the rate of are action depends.

(Book Inside) -------------------------------------------------------------------------------------------------------------------------------------

3. Differentiate rate of reaction & rate constant of reaction.
4. Write the rate constant expression for zero, first, second, & third order reaction. Give its units.
Question Bank for Organic Chemistry

15. Basic concepts of Organic Chemistry

3 Marks (Book Inside)

1. Write the IUPAC and Common names for all organic compounds given in text. (any three may be asked)
2. Write the synthesis of urea from inorganic compounds.
3. Define organic chemistry.
4. What is catenation?
5. Arrange the following in the order of decreasing catenation. C, O, N, P, S, Si.
6. What is open chain (or) acyclic (or) aliphatic compounds. Give example.
7. What is closed (or) cyclic compounds? Give its types with example.
8. What is homocyclic (or) carbon cyclic compound. Give an example.
10. What is aromatic compound? Give an example.
11. What is alicyclic compound? Give an example.
12. Give any three characteristics of organic compounds.
13. What is homologous series?
14. Give the characteristics of homologous series.
15. Give the general formula for alkane, alkene & alkyne.
18. What is structural isomerism? Give its types.
19. What is chain isomerism? Give one example.
20. What is position isomerism? Give one example.
23. What is hemolytic bond fission? Give one example.
24. What is heterolytic bond fission? Give one example.
25. What is substitution (or) Displacement reaction?
26. What are the types of substitution reaction?
27. What is Nucleophilic substitution reaction? Give one example.
28. What is Electrophilic substitution reaction? Give one example.
29. What is free radical substitution reaction? Give one example.
30. What is addition reaction? Give one example.
31. What are the types of addition reaction?
32. Give each one example for Nucleophilic, electrophilic & free radical reaction.
33. What is elimination reaction?
34. What are the types of elimination reaction? Give example for each.
35. What is polymerization reaction? Give one example.
36. What is condensation reaction? Give one example.
37. Write the types of hydrolysis. Give each one example.
38. What reduction reaction? Give one example.
39. Write a note on Clemmensen reduction.
40. What are the types of reagents? Give example for each.
41. What is electrophilic reagent? Give its types with example.
42. What Nucleophilic reagents. Give its types with example.
43. Write a note on formation of Carbonium ions.
44. Write a note on formation of carbanion.
45. Write a note on formation of free radical with examples.
46. What is photochemical fission? Give one example.
47. What is thermal fission? Give one example.
48. Write a note on positive & negative inductive effect. Give example for each.
49. Write a note on resonance (or) mesomeric effect. Give one example.
50. Write the possible resonance for benzene.

5 Marks (Book Inside)
1. Write the IUPAC and Common names for all organic compounds given in text. (any five may be asked)
2. Give the classification of organic compounds. Give example for each one.
3. What are the characteristics of organic compounds?
4. What are the characteristics of homologous series?
5. What is isomerism? Explain the types of isomerism with each one example.
6. How bond fission is occurs? Explain its types with example.
7. What is substitution reaction? Explain the types of substitution reaction with each one example.
8. What is addition reaction? Explain the types of addition reaction with each one example.
9. What is elimination reaction? Explain the types of elimination reaction with each one example.
10. Explain the nucleophilic & electrophilic reagent with some example for each.
11. Give any five differences between Nucleophiles & electrophiles.
12. Write a note on Carbonium ions, Carbanion & free radical.
13. Explain the types of Polar (or) Inductive effect with each one example.

16. Purification of Organic Compounds

3 marks (Book Back)
1. What are the different stages followed during Crystallization?
2. Define steam distillation.
3. What are different types of distillation?
4. Give the advantages of distillation under reduced pressure.
5. What are the types of paper Chromatography?

(Book Inside) -----------------------------------------------------------------------------------------------------
6. Give any three characteristics of organic compounds.
7. What are the various methods used for purification & separation of organic compounds?
8. Write a note on Crystallisation.
9. What is fractional distillation?
10. What are the procedures adopted to extract the organic substance from aqueous solution?
11. Write a note on Chromatography.
12. Write short notes on solvent extraction.
13. What are the differences between Paper Chromatography & Thin Layer Chromatography?

5 Marks (Book Back)
1. Explain the method of purifying solid organic compounds.
2. Write short notes on (a) Fractional crystallization (b) Solvent extraction.
3. Explain the purification of compounds by using TLC (Thin Layer Chromatography).
4. What are the various principles used in Chromatographic separation?
5. Write down the general characteristics of organic compounds.

(Book Inside) -----------------------------------------------------------------------------------------------------
6. Explain the fractional distillation.
7. Explain steam distillation.
8. Explain the distillation under reduced pressure.
9. Explain the purification of compounds by Paper chromatography.
10. Explain the purification of compounds by Column Chromatography.

17. **Detection and estimation of elements.**

**3 Marks (Book Inside)**
1. What is Quantitative analysis?
2. Write a note on Lassaigne’s test.
3. What are elements can be detected by Lassaigne’s test?
4. Write a note on Lassaigne’s test for Nitrogen.
5. Write a note on Lassaigne’s test for Sulphur.
6. Write a note on Lassaigne’s test for Chlorine.
7. Write a note on Lassaigne’s test for Bromine.
8. Write a note on Lassaigne’s test for Iodine.
9. What is Qualitative analysis?
10. What are the elements can be estimated by liebig’s combustion method?
11. What are the elements can be estimated by Carius method?
12. Mention the colour for AgCl, AgBr, AgI.

**5 Marks (Book Inside)**
1. Explain the detection of Carbon and Hydrogen.
2. Explain the detection of Oxygen.
3. Explain the detection of Nitrogen & Sulphur by Lassaigne’s test.
4. Explain the detection of Halogens by Lassaigne’s test.
5. Explain the estimation of Carbon & hydrogen by Liebig’s combustion method.
7. Explain the estimation of Sulphur by Carius method.
8. Explain the estimation of Halogens by Carius method.

**18. Hydrocarbon**

**3 Marks (Book Inside)**
1. What is hydrocarbon? Give its types.
2. What are the types of aliphatic hydrocarbon with each one example?
3. What is cracking?
4. Write a note on catalytic reduction of alkenes with one example.
5. Write a note on Wurtz reaction.
6. Write the preparation of alkanes from Grignard reagent.
7. Write a note on decarboxylation of carboxylic acid.
8. Write a note on Kolbe’s electrolytic method.
9. Convert: Alcohol to Alkane.
10. How will you prepare CCl₄ from methane?
11. What is Finkelstein (or) Conant – Finkelstein reaction?
12. Write a note on oxidation of alkanes in the presence of various oxidizing agent.
13. Write a note on Isomerization.
14. Write a note on aromatization.
15. Give any three examples for alkenes.
16. How will you prepare ethylene from alcohol/
17. Write a note on pyrolysis of ester.
18. How will you prepare ethylene by dehydrohalogenation of alkyl halide?
19. Write a note on Hydrogenation of alkynes.
20. How will you prepare ethylene from potassium succinate?
21. Write a note on Dehalogenation of vicinal halide.
22. Give examples for position & chain isomerism for alkenes.
23. What is Geometrical isomerism? Give one example.
24. Convert the following: (a) ethylene to ethyl chloride. (b) Propylene to isopropyl iodide. (c) Isobutylene to tert-butyl iodide.
25. How will you prepare ethanol from ethylene?
26. Write a note on Halohydrin formation with two examples.
27. What is ozonolysis. Give one example.
28. What is Hydroboration with one example?
29. Write a note on epoxidation.
30. Write a note on polymerization with one example.
31. Convert: (a) ethylene to formaldehyde. (b) Isobutylene to acetone.
32. What is hydroxylation with one example?
33. Give any three uses of alkenes.
34. Write two tests for ethylene.
35. Write the preparation of Hexa 1,5–diene.
36. Write a note on preparation of Allene gas.
37. Convert: cyclohexene to ethylene.
38. Give any three examples for alkynes.
39. Write a note on dehydrohalogenation of vicinal dihalide.
40. Write a note on dehydrohalogenation of tetrahalide.
41. Convert: (a) Acetylene to Ethane. (b) methyl acetylene to propane. (c) Acetylene to 1,1,2,2 tetra chloro ethane.
42. Convert: acetylene to 1,1-dibromo ethane.
44. Convert: (a) acetylene to acetaldehyde. (b) Methyl acetylene to acetone.
45. Write a note on addition of HOCl to acetylene.
46. Write a note on Ozone to acetylene & methyl acetylene.
47. How will you prepare Silver – acetylide.
48. How will you prepare Copper – acetylide.
49. Write a note on polymerization of acetylene.
50. Convert: (a) methyl acetylene to Mesitylene (or) 1,3,5 – tri methyl benzene.
51. Give any three tests for acetylene.
52. Give any three uses of alkynes.

**5 Marks (Book Inside)**
1. Explain any five general preparation of alkanes.
2. Write a note on (a) Isomerisation (b) Aromattization , of alkanes.
3. Write a note on (a) Halogenation (b) Nitration , (c) Oxidation , of alkanes.
4. Explain any five general methods of preparation of alkenes.
5. Write a note on (a) Hydrohalogenation (b) Hydration , (c) Halohydrin formation of alkenes.
6. Write a note on (a) Ozonolysis (b) Epoxidation , (c) Polymerization of alkenes.
7. Write a note on (a) Hydroxylation (b) Hydroboration (c) Diels – Alder reaction of alkenes.
8. Write any three method of preparation of alkadiene.
9. Explain the general methods of preparation of Methyl acetylene.
10. Write a note on addition of hydrogen , halogen , halogen acid on alkynes.
11. Write a note on addition of HOCl , Ozone , acid hydrogen on alkynes.
12. Write a note on (a) addition of Ozone on alkynes , (b) Polymerization of alkynes.

**19. Aromatic Hydrocarbon.**

**3 Marks**
1. What are benzenoid compounds?
2. Write a note on preparation of benzene from acetylene & aromatic acid.
3. Draw the structure of benzene, naphthalene, Anthracene.
4. Write a note on commercial preparation of benzene from coal tar.
5. Write a note on ortho, para, &meta position of benzene .give example for each.
6. Write the properties of Benzene ring (or) aromaticity.
7. Write a note on aromaticity in other related system.
8. What is ortho&para directing group? Give two examples.
9. What is meta directing group? Give two examples.
10. Write a note on Wurtz – Fitting reaction.
11. Write a note on Friedel – Craft’s reaction.
12. Write a note on commercial preparation of benzene.
13. Write a note on nitration with an example.
14. Write a note on Halogenations with an example.
15. Write a note on Sulphonation with an example.
17. Give any three uses of benzene.
18. Write a note on polynuclear aromatic hydrocarbon with three examples.
19. Draw the Kekule’s structure of Benzene.
20. What is delocalized bonding.

**5 Marks**

1. How is Benzene prepared commercially?
2. Explain the term aromaticity.
3. Write a note on activating group in benzene.
4. How would you convert the following?  (a) Sodium benzoate to benzene. (b) Phenol to benzene (c) benzene to toluene.
5. Write briefly on resonance in benzene.
6. Explain the structure of Benzene.
7. Write a note on (a) Nitrat (b) Halogenation. (c) Sulphonation. (d) Friedel – Craft’s alkylation of Benzene.

20. **Organic Halogen compounds**

**3 Marks (Book Inside)**

1. What are organic halogen compounds? Give two examples.
2. Give two nature organic halogen compounds and its medical value.
3. Give two synthetic organic halogen compounds and its medical value.
4. What are the types of alkyl halide based on alkyl group. Give one example for each.
5. How will you prepare 1, 2, 3, alkyl halide from alcohol?
6. How will you prepare chloroethane from ethylene?
7. What is Markovnikoff's rule? Give one example.
8. Write the decreasing order of stability of 1,2,3carbonium ion.
9. Write the preparation of 1,2 – dichloro ethane from the ethane in the presence of light.
10. Write a note on Hunsdiecker (or) Borodine – Hunsdiecker reaction.
11. What is Finkelstein reaction?
12. What is Swartz reaction?
13. Write the preparation of any three dihalogen compounds.
14. Give each three examples for ionic (or) neutral nucleopliles.
15. What are the types of Nucleophilicreactions?

16. Write a note on $S_N^2$ reaction.
17. Write a note on $S_N^1$ reaction.
18. What are the types of elimination reactions?
19. Write a note on E2 reaction.
20. Write a note on E1 reaction.
22. What are aryl halides? Give two examples.
23. How will you prepare chlorobenzene from benzene & Diazonium salt?
24. How will you prepare Bromobenzene from benzene & Diazonium salt?
25. How will you prepare phenol, aniline & phenyl cyanide from chlorobenzene.
26. What is Wurtz – Fitting reaction? Give one example.
27. What is Fitting reaction? Give one example.
28. Convert: Chlorobenzene to benzene.
29. Write a note on formation of Grignard reagent.
30. Write a note on Chlorination on Chlorobenzene.
31. Write a note on Nitration on Chlorobenzene.
32. Write a note on Sulphonation on Chlorobenzene.
33. Write a note on Alkylation on Chlorobenzene.
34. Write a note on preparation of DDT.
35. Give any three uses of aryl halide.
36. Convert toluene & benzyl alcohol to benzyl chloride.
37. Convert benzyl chloride to toluene & benzaldehyde.
38. Give any three examples for Grignard reagents.
39. What are organometallic compounds? Give two examples.
40. Write a note on preparation of methyl magnesium iodide.
41. How will you prepare methane from Grignard reagent?
42. How will you prepare ethanol from Grignard reagent?
43. How will you prepare isopropyl alcohol from Grignard reagent?
44. How will you prepare tert-butyl alcohol from Grignard reagent?
45. How will you prepare acetaldehyde from Grignard reagent?
46. How will you prepare acetone from Grignard reagent?
47. How will you prepare methyl propanoate from Grignard reagent?
48. How will you prepare acetic acid from Grignard reagent?
49. How will you prepare ethyl methyl ether from Grignard reagent?
50. How will you prepare acetonitrile from Grignard reagent?

5 Marks (Book Inside)

1. Explain the general method of preparation of alkyl halide.

2. Explain the mechanism of $S_{N2}$ reaction.
3. Explain the mechanism of $S_{N1}$ reaction.
4. Explain the mechanism of E2 reaction.
5. Explain the mechanism of E1 reaction.
6. How will you prepare 1,2,3 alcohols from methyl magnesium iodide.
7. How will you prepare acetaldehyde, acetone & acetic acid from methyl magnesium iodide?
8. How will you prepare methyl propanoate, ethyl methyl ether & acetonitrile from CH$_3$MgI?
9. Write a note on (a) Finkelstein reaction (b) Swartz reaction (c) Hunsdiecker reaction.
10. Write a note on (a) Wurtz–Fitting reaction (b) Fitting reaction.

*****All the Best*****

Prepared by

Mr. K N SUBRAMANI. M.Sc. B.Ed. (CHEMISTRY)
GOVT. HR. SEC. SCHOOL,
THUMMANATTY POST,
THE NILGIRIS - 643002.

MOBILE No. 9943009170