

INSTITUTE OF TEACHING AND RESEARCH IN AYURVEDA

[INSTITUTE OF NATIONAL IMPORTANCE]

MINISTRY OF AYUSH, GOVERNMENT OF INDIA

B. PHARM. (AYU.) I YEAR

PHARMACEUTICAL CHEMISTRY I (INORGANIC CHEMISTRY)

Question Bank

CHAPTER: Periodic table and atomic configuration.

[10marks]

1. What is Mendeleeff's periodic law. Write down salient features of Mendeleeff's periodic law.
2. What are the salient features of Mendeleeff's periodic law?
Or Explain salient features of Mendeleeff's periodic law.
3. Explain modern periodic table in brief.
4. Explain modern periodic table with its characteristic in detail.
5. How will properties changes when moving in periodic table? Explain.
6. Explain modern periodic table. How it is superior to Mendeleeff's periodic table.
7. Describe earlier efforts classifying elements. State Mendeleeff's periodic law and its salient feature.
8. Narrate the historical development of periodic table.

[5marks]

1. Explain electronic configuration in C, N, O, and Ne.
2. Explain bond length.
3. Note on periodic table.
4. Explain Ionization energy.
5. Explain Electron affinity.
6. Explain Electro negativity.

[2marks]

1. What is Mendeleeff's periodic law.
2. Write down salient features of Mendeleeff's periodic law.
3. Define Valence electron.
4. Define Valence.
5. Define Ionization energy.
6. Define Electron affinity.
7. Define Electro negativity.
8. Which elements are known as alkali metals?
9. Enlist Transition metals.
10. Enlist Nobel gases.

11. Define Valence electron.

CHAPTER: Limit tests

[10marks]

1. What do you mean by impurities? Explain the importance of limit test in Pharmaceutical Preparation. Explain the principle of limit test for Iron.
2. What do you mean by impurity? What is the effect of impurity on substances when present above limits?
3. Explain the limit test of arsenic with labeled diagram and giving the reactions and role of reagents used.
4. What is the importance of IP85 method?
5. Explain limit test for chloride with suitable example.
6. Define Limit test. Write limit test for arsenic.
7. Define Limit test. How it is done for Fe^{++} ?
8. Describe limit test for metallic load in pharmaceuticals in details.

[5marks]

1. Write Principal /Theory of limit test for Iron.
2. Write Principal /Theory of limit test for chloride.
3. Write Principal /Theory of limit test for Heavy metal.
4. Write a short note on Sources of Impurities.
5. Write Principal of limit test for arsenic.
Or narrate the limit test of arsenic in short.

[2marks]

1. Define Limit test.
2. Give role of Lead acetate pledger or papers in Gutzeit's test.
3. Explain importance/Advantages of limit test.
4. What do you mean by impurity?
5. Which compound is used as a standard in limit test of arsenic?
6. Draw the diagram of Gutzeit's test apparatus.
7. Or Draw labeled diagram of arsenic.

CHAPTER: Volumetric analysis (Quantitative analysis)

[10 / 5 marks]

1. How will you prepare standard acid solution and its standardization with example of HCl.
1. Explain Process of Titration in volumetric analysis.
2. How will you prepare standard alkali solution and its standardization with example of NaOH?
3. Advantages and disadvantages of nonaqueous titration.
4. Explain Acid base titration.
5. Explain Non-aqueous titration.
6. Explain Oxidation Reduction Reactions.(Redox reaction)
7. Explain Compleximetric titration.

8. Explain Precipitation titration.
9. Explain Fajan's method.
10. Explain Volhard's method.
11. Explain Mohr's method.
12. Explain Process of Titration.
13. Write a detailed note on Iodometric and Iodimetric method.

[2marks]

1. Define with examples. Chelate.
2. Define Iodometry.
3. Define Iodimetry.
4. Define Reducing agent with examples.
5. Define Oxidizing agent with examples.
6. Define Amphiprotic Solvents.
7. Define Protogenic Solvents.
8. Define Protophillic Solvents.
9. Define Volumetric analysis.
10. Define Titer.
11. Difference between primary standard and a secondary standard.
12. Define Primary Standard.
13. Define Secondary Standard.
14. Primary standard should requirement.
15. Define Standardization.
16. Define Weight percent.
17. Define Molality .
18. Define Titration flask.
19. Define Titration error.
20. Define Normality.
21. Define Ligand.
22. Define Molarity.
23. Define Standard Solution.
24. Define Equivalence Point.
25. Define Indicator.
26. Define Titration.
27. Define Titrant.
28. Which indicator used in Mohr method.
Or Name any 2 indicator used in Mohr method.
29. Write advantages of EDTA.
30. Draw a structure of Disodium Salt of EDTA.
31. Which indicators used in complex-metric titration.
Or Name any 2 indicators used in complex-metric titration.
32. Which indicators used in redox titration.
Or Name any 2 indicators used in redox titration.
33. Write down an acid base indicator.
34. Or Name any 2 indicators used in acid base titration.

35. Define Quantitative analysis.
36. Define Acidimetric.
37. Define Alkalimetric.
38. Define Volumetric analysis.
39. Define End point.
40. Define Equivalence point.
41. Define Equilibrium constant.
42. Define Chemical Reaction.
43. Define Chemical Equilibrium.
44. Define Bronsted base and Bronsted acid.
45. Define Arrhenius Acid and Arrhenius Base.
46. What is the end point?
47. Write types of titrations.
48. Why need for volumetric analysis?
49. Which indicator used in Volhard's method.
50. Which indicator used in Fajan method.
51. Define Acid and Base.
52. Write common indicator.
53. Write various acid base examples.

CHAPTER: Buffer solutions

[10marks]

1. Define pH. Write Henderson-Hasselbalch equation.
2. Define buffer solution and classify them. Write Role of buffer in pharmacy fields.
3. Define buffer solution and classify them. Applications of buffer solutions.
4. Define buffer solution and explain in detail Henderson-Hasselbach equation for buffer.

[5marks]

1. How a buffer operates?
Or Write mechanism of action of buffer.
2. Write Henderson-Hasselbalch equation.
3. Write Role of buffer in pharmacy fields.
4. Applications of buffer solutions.
5. Discuss the factors affecting selection of Pharmaceutical buffers and name any two physiological buffers and two analytical buffers.

[2marks]

1. Define buffer & classify them
2. Uses of buffer in pharmacy fields.
3. Examples of buffer solution.
4. Selection criteria for buffer solution./properties of buffer solution
5. Define pH.
6. Define Ionization.
7. Buffer capacity.
8. Write uses of buffer solution.
9. What do you mean by buffer solutions and buffer capacity?

CHAPTER: Metals

[5marks]

1. Give the chemical name, structural formula and use of the following.
 1. Green Vitriol
 2. Rochelle salt
 3. Baking soda
 4. Bleaching Powder
2. Give the synonyms and uses of the following. 06
 - a. Precipitated chalk
 - b. Lunar caustic
 - c. Green vitriol
 - d. Rochelle salt
2. Write a reaction of calcium and potassium.
3. Give occurrence, properties, and uses of Calcium (Ca).
4. Give occurrence, properties, and uses of Iron (Fe).
5. Give occurrence, properties, and uses of Mercury and Iron.
6. Give occurrence, properties, and uses of Copper (Cu).
7. Give metals and its compounds along with formula.
8. Give occurrence and properties of mercury.
9. What are different reactions of lead and sodium?

[2marks]

1. Give occurrence, of Calcium (Ca).
2. Give occurrence and uses of Iron (Fe).
3. Give occurrence and uses of Mercury (Hg).
4. Give occurrence of Copper (Cu).
5. Give metals and its compounds along with formula.
6. Give occurrence and properties of mercury.
7. Give uses of Mercury (Hg).
8. Give uses of Gold (Au) 2
9. Give uses of Copper (Cu).
10. Give uses of Aluminum (Al).
11. Give uses of Calcium (Ca).
12. Give uses of Iron (Fe).
13. Give uses of mercury (Hg).
14. Write properties of gold.
15. Write properties of Mercury.
16. Properties of gold.
17. Properties of aluminum.
18. Write properties of Copper.
19. Write properties of Calcium.
20. Write properties of sodium.
21. Write properties of arsenic.
22. Write uses of mercury.

23. Write uses of gold.
24. Write a reaction of lead and sodium.

CHAPTER: Ammonium chloride and Borax

[10marks]

1. Ammonium chloride.
2. Comment on following.
 - a. Manganese dioxide is used in preparation of iodine from kelp.
 - b. Glycerin is added in assay of Boric acid.
 - c. Aqueous Ammonia is added in limit test of lead
3. Draw structure of ammonium chloride, Assay of ammonium chloride.
4. Method of preparations and properties of ammonium chloride
5. Draw structure of borax, Assay of borax.
6. Method of preparations and properties of borax.

[5marks]

1. Write chemical properties of borax.
2. Write method of preparation of borax.
3. Write properties of borax.
4. Give assay of borax.
5. Write method of preparations of ammonium chloride.
6. Give properties of ammonium chloride.
7. Write assay of ammonium chloride.
8. Write Assay Principle and chemical reaction of following.
 - a. Borax
 - b. Ammonium chloride

[2marks]

1. Draw structure of ammonium chloride.
2. Write uses of ammonium chloride.
3. Draw structure of Borax.
4. Write uses of Borax.
5. Write uses of Borax.
6. Write method of preparation of borax.
7. Write properties of borax.
8. Write molecular formula of borax.
9. Give the name of any 2 compound used as antioxidant.

CHAPTER: Anti oxidants

[10marks]

1. Explain Hypophosphorous acid as an antioxidant.
2. Explain Sodium nitrite as an antioxidant.
3. Explain Sodium thiosulphate as an antioxidant.
4. Explain Sodium bisulphite as an antioxidant.
5. Explain Sodium metabisulphite as an antioxidant.
6. What are the antioxidants? Explain preparation of sodium thiosulphate.

7. Explain Nitrogen as an antioxidant.

[5marks]

1. How does antioxidant works? (mechanism of action)
2. Explain Hypophosphrous acid as an antioxidant.
3. Explain Sodium nitrite as an antioxidant.
4. Explain Sodium thiosulphate as an antioxidant.
5. Explain Sodium bisulphite as an antioxidant.
6. Explain Sodium metabisulphite as an antioxidant.
7. Explain Nitrogen as an antioxidant.
8. Assay of Hypophosphrous acid.
9. How does antioxidant works? (Mechanism of action)

[2marks]

1. Definition of anti oxidant.
2. Examples of antioxidant.
3. Characteristics/ Properties/ Criteria of antioxidant.
4. Uses of antioxidant.
5. How does antioxidant works? (mechanism of action)
6. Uses of Hypophosphrous acid.
7. Uses of Nitrogen.
8. Uses of Sodium bisulphite
9. Uses of Sodium thiosulphate
10. Uses of Sodium metabisulphite.
11. Uses of Sodium nitrite.
12. Write down various examples of antioxidants.
13. Assay of Hypophosphrous acid.
14. Assay of Sodium metabisulphite.
15. Assay of Sodium nitrite.
16. Assay of Sodium thiosulphate.
17. Assay of Sodium metabisulphite.
18. Assay of Sodium nitrite.
19. Assay of Sodium thiosulphate.
20. Draw structure of Hypophosphrous acid.
21. Draw structure of Sodium metabisulphite.
22. Draw structure of Nitrogen.
23. Draw structure of Carbon dioxide.
24. Draw structure of Sodium sulphite.
25. Draw structure of Sodium bisulphate.
26. Draw structure of Sodium nitrate.
27. Draw structure of Sodium thiosulphate.
28. Draw structure of Sulphur dioxide.
29. Characteristics/ Properties/ Criteria of antioxidant.

CHAPTER: Gravimetric analysis

[10marks]

1. Write down various steps involved in gravimetric analysis.
2. Define gravimetric analysis. Explain Precipitation, incineration steps of gravimetric analysis.
3. What is gravimetric analysis? Explain various steps of gravimetric analysis.
4. What is theory of gravimetric analysis? Describe the washing of precipitate in gravimetry.
5. Explain 'Precipitation' and Washing of precipitates in gravimetric analysis.
6. What are limitations of gravimetric analysis? Explain the following terms
 - a) Mother liquor,
 - b) Ash treatment
 - c) Coagulation
 - d) Digestion.
7. Experimental technique of gravimetric analysis.
8. Illustrate the various steps of gravimetric analysis in short.
9. Limitations of gravimetric analysis.
10. Write down theories/principle of gravimetric analysis.
11. What is theory of gravimetric analysis? Calculation of gravimetric analysis
12. Explain Precipitation, Filtration, Washing of precipitate in gravimetric analysis.
13. Explain drying the precipitate, Ignition, Weighting in gravimetric analysis.
14. Explain Precipitation in gravimetric analysis.
15. Explain, Filtration in gravimetric analysis.

[5marks]

1. How are Fe and Al precipitated as in gravimetry?
2. Define gravimetric analysis. Explain in detail.
3. Answer the following:
 1. Ionic product of water
 2. Law of mass action

[2marks]

1. Application of gravimetric analysis.
2. Define gravimetric analysis.
3. What is theory of gravimetric analysis?
4. Difference between gravimetric analysis and volumetric analysis .
5. Give examples of pharmacopoeial substance for gravimetric analysis.
6. Limitations of gravimetric analysis.
7. Example of gravimetric analysis.
8. Define Coagulation.
9. Enlist Experimental technique of gravimetric analysis.
10. Advantage of gravimetric analysis
11. Disadvantage of gravimetric analysis.
12. Define Digestion.
13. Calculation of gravimetric analysis
14. Define co-precipitation.

15. Define mother liquor.
16. Define Post precipitation.
17. What is ash treatment?
18. How is precipitate dried in gravimetry?
19. What kind of filter paper is used for filtration in gravimetry?