

Rajiv Gandhi University of Health sciences, Bengaluru
Pharmaceutical Inorganic Chemistry
QP Code: 2629
Question Bank

Chapter: Sources of Impurities and Limit Tests

2 Marks:

1. Explain the principle for the limit test for Iron.
2. Define limit test
3. Write the principle and reactions involved in the limit test for sulphate.
4. Write the use of citric acid and ammonia in Iron limit test.
5. Role of acetic acid and ammonia in the limit test for heavy metals.
6. What is the role of thioglycollic acid in iron limit test.
7. Role of lead acetate cotton wool in arsenic limit test.
8. What is a limit test? Why it is carried out?
9. Reagents used in arsenic limit test.
10. Ethanolic sulphate standard solution is used in limit test for sulphates. Give reason.
11. How do you carry out the limit test for chloride and sulphates in KMnO_4 ?
12. Write the Preparation and use of Barium Sulphate reagent.
13. What is the basis for fixing the limits for impurities?
14. Why dilute nitric acid is used in the limit test for chloride?
15. Differentiate between limit test and test for purity.
16. Why ammonia is used in the limit test for iron?
17. State the meaning of the term opalescence and turbidity.

5 Marks:

18. Write the principle, reactions and procedure involved in the limit test for iron.
19. Write the principle and reactions involved in the limit test for Arsenic.
20. Write the principle involved in the limit test for Sulphate.
21. Write the principle and reactions involved in the limit test for sulphate.
22. How do you carry out the limit test for chlorides in the given sample of sodium bicarbonate and sodium benzoate?
23. Explain the principle and procedure for the limit test for sulphates.
24. Write in detail the principle and reactions involved in the limit test for Arsenic.
25. Give the principle and reactions involved in the limit test for sulphates.
26. Give the principle and procedure involved in sulphate limit test.
27. Write the principle involved in the limit test for Arsenic.

28. Write the principle of limit test for lead.
29. Write the procedure and principle with reactions for limit test for lead.
30. Write the principle and reaction involved in heavy metals (IP) limit test.
31. Give the principle, reactions involved in the limit test for Iron and Lead.
32. Write in detail the principle, reactions and procedure for the limit test for Iron.
33. Explain briefly the implications of impurities in the pharmaceutical substances.

10 Marks:

34. Describe the various sources of impurities present in pharmaceutical substances.
35. Write briefly the different sources of impurities present in pharmaceutical substances.
36. Explain the principle and procedure involved in the limit test of arsenic with a neat labelled diagram of Gutzeit's apparatus.
37. Give principle, procedure, reactions and role of reagents involved in the limit test for a) Iron b) Lead based on IP 1996 method.
38. Explain the various sources of impurities in pharmaceuticals. Discuss the importance of limit tests in quality control of pharmaceuticals.
39. Write briefly the different sources of impurities present in pharmacopoeial substances.
40. What are impurities? Explain different sources of impurities with examples.
41. Write the procedure and principles for the limit tests for a) Sulphates b) Iron Describe the principle, apparatus and procedure for the limit test of arsenic.
42. Define limit test? List out different limit test you have studied. Discuss in detail the limit test for sulphate and iron.

Chapter: Medicinal Gases**2 Marks:**

43. Give any two medicinal uses for Nitrous oxide and Carbon dioxide.
44. Name two medicinal gases with their uses.
45. Give the uses of Oxygen and Carbon dioxide.
46. Write the labelling and storage conditions for Oxygen, CO₂, N₂O
47. Write the methods of preparation and uses of Nitrous oxide gas.

Chapter: Gastrointestinal Agents**2 Marks:**

48. What are antacids? Give examples.
49. Give examples of gastrointestinal agent and protective agents.
50. Give the method of preparation of Milk of magnesia.
51. What is achlorhydria. Give its treatment.

52. Define saline Cathartic give examples.
53. Write the molecular formula and uses of Milk of Magnesia.
54. Write the uses of aluminium hydroxide and magnesium hydroxide.
55. What are gastrointestinal protective and adsorbents? Give example.
56. Write the composition and uses of kaolin.
57. Chemical composition and uses of magnesium trisilicate.
58. Write two uses of NaHCO_3
59. What are nonsystemic antacids
60. Give the synonym of NaHCO_3 , MgSO_4 , milk of magnesia
61. Define antacids. Give examples
62. Classify gastrointestinal agents with examples.
63. Write adverse events of antacids.

5 Marks:

64. Give the method of preparation and uses of Aluminium hydroxide gel.
65. Define and classify antacids with examples. Add a note on combination antacid Therapy.
66. Define cathartics. Give the preparation, assay and used of Magnesium sulphate.
67. Write the method of preparation and assay of Aluminium hydroxide gel.
68. What are GIT agents? Classify them with examples. Write a note on acidifiers.
69. What are antacids? Classify them with examples. State requirements for an ideal antacid.
70. Define and classify antacids? Discuss the preparation, assay principle and medicinal uses of Baking soda.
71. Write the principle for the assay of magnesium hydroxide.
72. What are saline cathartics? What is their mechanism of action?
73. Enlist different antacids. Write the preparation and uses of aluminium hydroxide gel.
74. What are antacids? Write the characteristics of an ideal antacid. Write the preparation of magnesium hydroxide mixture.
75. Write a note on antacid combination therapy.
76. Write the methods of preparation and assay principle of magnesium hydroxide mixture.
77. What are antacids? Classify them with examples. Give the method of preparation and assay principle of Sodium bicarbonate.
78. Write the method for preparation, assay and uses of Milk of Magnesia.

10 Marks:

79. What are Antacids? Classify them with examples. Give the ideal properties of antacids. Write the preparation, assay and uses of Sodium bicarbonate.
80. What are Antacids? Classify them with examples. Give the ideal properties of antacids. Write the preparation, assay and uses of Aluminium Hydroxide.

81. What are Antacids? Classify them with examples. Give the ideal properties of antacids. Write the preparation, assay and uses of Magnesium hydroxide.
82. What are GIT agents? Write the principle and reaction for assay of sodium bicarbonate.
83. What are GIT agents? Write the principle and reaction for assay of Aluminium hydroxide.
84. What are GIT agents? Write the principle and reaction for assay of Magnesium hydroxide.

Chapter: Topical Agents**2 Marks:**

85. What are protective and adsorbents? Give two examples.
86. What are antimicrobial agents? Give examples.
87. Why sulphuric acid is added in the assay of Hydrogen peroxide.
88. What is the use of glycerine in boric acid assay?
89. Give reason for the use of glycerine in the assay of boric acid.
90. Define antimicrobial agent. List out the antimicrobial agents with molecular formula.
91. Preparation of boric acid?
92. Give reasons: Dilute sulphuric acid used in the assay of hydrogen peroxide.
93. Give the composition and method of preparation of Iodine tincture.
94. Mention various preparations of iodine and their use.
95. What are antimicrobial agents? Give examples.
96. Name two antimicrobials with their molecular formula.
97. Write the molecular formula of boric acid and chlorinated lime.
98. Write the synonym for bleaching powder and its uses.
99. Write the molecular formula and uses of ZnO
100. Write the molecular formula and uses of KMnO_4
101. Write the molecular formula and uses of Boric acid.

5 Marks:

102. Write the principle involved in the preparation and assay of Hydrogen peroxide.
103. Describe the various mechanism of action of inorganic anti-microbial agents.
104. What are anti-microbials? Give the method of preparation and principle in the assay of boric acid.
105. Give the preparation, assay and uses of boric acid.
106. What are antimicrobials? Write a note on various iodine preparations.
107. Write the preparation and uses of Chlorinated lime and boric acid.
108. Explain the principle and reactions in assay of Chlorinated lime.

109. Write the preparation, uses and principle involved in the assay of KMnO_4 .
110. Describe the principle and procedure of assay of ZnO .

Chapter: Dental Products**2 Marks:**

111. Write about zinc eugenol cement.
112. What are anticaries agents? Give examples.
113. What is dental caries? Name two anticaries agents. .
114. What is desensitizing agents. Give examples.
115. What is Dentifricing agents. Give examples.
116. What are dental products? Classify them with examples.
117. Write the composition and application of zinc eugenol cement

5 Marks:

118. Discuss the role of fluorides in dental caries.
119. What are dentifrices? Classify them with example. Write a note on role of fluoride as anticaries agent.
120. Preparation and medicinal uses of calcium carbonate and sodium fluoride.
121. Describe the method of preparation and uses of any two dental products.

Chapter: Miscellaneous Agents**2 Marks:**

122. Define term antidotes. Give examples.
123. What are haematinics? Give examples.
124. Define emetics with examples.
125. Give the chemical formula and medicinal use of sodium metabisulphite.
126. Define expectorant and emetics Give examples.
127. Give reasons: a) Potassium iodide is used in the assay of Copper sulphate
b) HCHO used in the assay of Ammonium chloride.
128. What are expectorants? Give an example.
129. Barium sulphate meal.
130. Write pharmaceutical uses of activated charcoal and sodium thiosulphate.
131. Write the pharmaceutical importance of Bentonite powder.
132. Give the composition and uses of Bentonite.
133. Define antidotes with examples.

134. Write the molecular formula and medicinal uses of sodium thiosulphate.
135. What is Haematinics. Give examples.
136. What are antidotes? Give the method of preparation and importance of activated charcoal.
137. Write the synonym for ferrous sulphate and copper sulphate.
138. What are pharmaceutical aids? Give examples.

5 Marks:

139. Write a note on pharmaceutical aids.
 140. Explain the method of preparation and assay of Ammonium chloride.
 141. Explain the principle and reactions involved in the assay of copper sulphate.
 142. Write the preparation and assay of ferrous sulphate.
 143. Explain the preparation and assay of green vitriol.
 144. Write the method of preparation and assay of copper sulphate.
 145. Explain the principle and reactions involved in the assay of Copper sulphate.
 146. Write the method of preparation of and use of sodium metabisulphite and sodium benzoate.
 147. Give the assay and medicinal uses of ferrous sulphate.
 148. What are expectorants? Give the method of assay of any one expectorant.
 149. What ate haematinics? Give the method of preparation, assay principle and medicinal uses of ferrous sulphate.
 150. What are expectorants? Give example and mechanism of action.
- 151: Define and classify antidotes with examples. Write a note on activated charcoal.

Chapter: Major Intra and Extracellular Electrolytes**2 Marks:**

152. Give the composition of sodium chloride injection.
153. What is the biological importance of sodium and chloride ion?
154. What is milliequivalent per litre?
155. Write the formula and uses of ORS.
156. Classify extra and intra cellular electrolytes with examples
157. Give the method of preparation and uses of calcium gluconate injection

5 Marks:

158. Discuss the physiological acid base balance in the body.
159. Write a note on electrolytes used in replacement therapy.

160. Explain the preparation, assay principle, storage conditions and medical uses of calcium gluconate injection.
161. Describe the physiological mechanism of acid base balance in the body.
162. What is electrolyte combination therapy? Explain a note on ORS.
163. Explain the physiological role of sodium, calcium, chloride and bicarbonate ions.
164. Give the principle and reaction involved in the assay of Calcium gluconate.
165. Write a note on physiological acid base balance.
166. Write a note on combination of electrolyte replacement therapy.

Chapter: Sources of Errors and Minimization of Errors

2 Marks:

167. Explain the importance of significant figures.
168. Define accuracy and precision.
169. What are errors? Classify them with examples.
170. Differentiate between accuracy and precision.

5 Marks:

171. Explain various methods of minimization of errors.
172. Explain different types of errors. Write any two methods to minimize them.
173. Explain the different types of errors in volumetric analysis and methods to minimize them.
174. Classify determinate errors. Explain the steps to minimize the errors.
175. Discuss the different methods to minimize errors in analysis.

3. Fundamentals of volumetric analysis:

2 Marks

176. What is back titration?
177. What is a blank titration?
178. Define the terms normality, molarity, molality, and percentage w/v.
179. Define the term titration, titrant, titrand and equivalent point.

5. Marks

180. Explain the different methods of expressing concentration of a solution with examples.

181. What is primary standard? Enumerate the criteria for a substance to be classified as a primary standard. Mention their uses in different titrations.
182. What is back titration? Under what conditions are such titrations used? Explain with examples.
183. How do you calculate the equivalent weight and molecular weight of a substance. Give examples

3.2. Neutralisation titration and Nonaqueous titration

2 Marks

184. What are acid base indicators? Give examples
185. Name some indicators used in non-aqueous titrations.
186. Name the solvents used in nonaqueous titrations
187. What is acetous perchloric acid.
188. What is leveling and differentiating effects
189. What is the role of acetic anhydride in preparation of perchloric acid solution.
190. Give the pH range of phenolphthalein and methyl orange indicators
191. Write a note on mixed indicator.

5 Marks

- 6 How can you prepare and standardize 0.1 N Sodium hydroxide solution and 0.1 N HCl
- 7 Give the preparation, standardization and storage of Perchloric acid?
- 8 Write the method of preparation and standardization of 250 ml of 0.1 M sodium hydroxide.
- 9 Discuss the theory of non-aqueous titrations.
- 10 Write a note on the applications of non-aqueous titrations in pharmaceutical analysis.
- 11 Name the different types of solvents used in non-aqueous titrations and explain their uses in different titrations.
- 12 Write the principle and procedure for the non-aqueous titration of sodium benzoate.
- 13 How do you prepare, standardize and store a 0.1 N Perchloric acid solution?
- 14 Explain the neutralization curve for strong acid vs strong base, weak acid vs strong base.
- 15 Explain theory of acid base indicators in detail.

3.4 Redox titrations:

10 Marks

- 16 What are the various methods of determining the end point in a redox titration?
- 17 What are Redox titrations? Explain the preparation, assay and use of Copper sulphate and hydrogen peroxide.
- 18 Describe the principle and reactions involved in the assay of copper sulphate and potassium permanganate.

- 19 Discuss iodometry and iodimetry titrations briefly with examples.

5 Marks

- 20 Discuss the theory of redox titrations.
21 Explain the advantages of cerimetry over permanganometry and describe one of its applications in pharmaceutical analysis.
22 Write the principle of bromometric titration with examples.
23 Write notes on redox indicators.
24 Differentiate between iodometry and iodimetry titrations.
25 Explain the preparation and standardization of 0.1N KMnO_4 , $\text{Na}_2\text{S}_2\text{O}_3$.
26 Explain the preparation and standardization of 0.1N KMnO_4 , Iodine solution.
27 Write a note on titration of potassium iodide by using potassium iodate solution.

2 Marks

- 28 What is redox potential.
29 Define oxidation and reduction.
30 How do you store KMnO_4 and Iodine solution?
31 Give the role of starch as indication in redox titrations
32 Calculate gram equivalent weight of potassium permanganate and Iodine.
33 Calculate gram equivalent weight of Hydrogen peroxide and oxalic acid.
34 Calculate gram equivalent weight of Sodium thiosulphate and potassium iodate.
35 Explain the role of 2,6-dichlorophenol indophenols in redox titrations.
36 What are self-indicators? Give examples.

3.5. Precipitation titrations:**5 Marks**

- 37 Write the principle for Fajan's method in detail.
38 Explain the mechanism of action of indicators in Fajan's method.
39 Write any two methods of determining the end point in a precipitation titration.
40 Define and classify precipitation titrations and give the principle involved in the assay of sodium chloride.
41 Explain the various methods of argentimetric titration with examples.
42 Describe the principle and procedure for the Mohr's method for the determination of chlorides.
43 Explain modified Volhard's method for the determination of sodium chloride
44 Compare and contrast Mohr's method and Volhard's method.

2 Marks

- 45 Why are nitrobenzene and nitric acid used in modified Volhard's method?
46 What are adsorption indicators

- 47 Write the role of potassium chromate in Mohr's method.

3.6. Complexometric titrations:

5 Marks

- 48 Explain the advantages of EDTA as a complexing agent in complexometric titration.
49 Classify the various EDTA titrations and explain each one in detail.
50 Write the principle and reaction involved in the assay method of calcium gluconate.
51 How do you prepare and standardize 0.05 M disodium EDTA solution
52 Write short notes on complexometric back titrations/displacement titrations.
53 What are complexometric titrations? Explain the different types with examples.

2 Marks

- 54 What are masking and demasking agents?
55 Write a note on metal ion indicators with examples.
56 What is a ligand. Give examples.
57 What is chelating agents. Give examples
58 What are sequestering agents. Give examples.
59 Write any 4 indicators for complexometric titrations.
60 What is the difference between chelates and the complexes.

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