APRIL - 1990

009

FIRST B.Pharm. EXAMINATION, APRIL 1990.

PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours.   Maximum : 100 marks.

Answer Questions 1 and 5 and any other FOUR.

1.   (a) Complete the following reactions. Use any other reagents if need be. Balance the equation :

(i) Boric acid + Glycerol $\longrightarrow$

(ii) $KMnO_4 + H_2C_2O_4 + H_2SO_4 \longrightarrow$

(iii) $Na_2S_2O_3 + I_2 \longrightarrow$

(iv) $KI + H_2SO_4 + MnO_2 \longrightarrow$

(v) $Ca(OCl)Cl + H_2O + CH_3COOH \longrightarrow$

(vi) $CuSO_4 + KI \longrightarrow$.   (6)

(b) Give the method of preparation for the following reagents :

(i) Perchloric acid.

(ii) Hydazine.

(iii) Boron trifluoride.

(iv) Thronyl chloride. $(3 \times 4 = 12)$

2.   (a) Enumerate the official compounds of Magnesium giving their formulae uses and synonyms if any.   (5)

(b) Give the method of preparation and assay of Magnesium trisilicate and Milk of Magnesia. $(6 + 5)$

3. Give the method of preparation and uses of the following :

    (i) Potassium iodide.

    (ii) Ferric ammonium citrate.

    (iii) Hydrogen peroxide.

    (iv) Calcium gluconate. $(4 \times 4 = 16)$

4. (a) What are the common impurities found in pharmaceutical substances ? What are their sources ? How do they affect the product ?   (5)

(b) Describe the principle, apparatus, procedure involved in the limit test for Arsenic. $(2 + 4 + 5)$

5. (a) State the laws of elevation of boiling point and lerive the relationship between the elevation of boiling point and molarity of the solution.   (10)

(b) Describe the cryoscopic method for the determination of molecular weight of a volatile solute of a solution.   (8)

6. (a) What do you understand by partition coefficient ?   (4)

(b) Describe an experimental method for the determination of partition coefficient.   (8)

(c) Describe its application in the process of extraction of solutes uses immiscible liquids.   (4)

7. (a) What do you understand by pH and pOH ? Derive an expression.   (4)

(b) Describe the different experimental methods for the determination of pH of substances.   (12)

8. (a) State and explain first and second law of thermodynamics.   (6)

(b) What is distribution law ? Under what conditions is the law valid ? How is distribution method adopted to show that benzoic acid is associated i.' benzene.   (10)

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009

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1990.

Paper I — PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours.   Maximum : 100 marks.

Answer Question Nos. 1 and 5 and any other FOUR
questions.

1.   (a) Give reasons for the following :

(i) Mannitol or glycerol is used in the assay
of Boric acid.

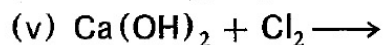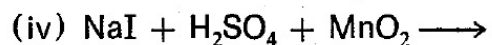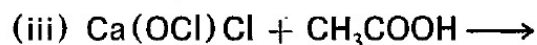(ii) In the preparation of KBr charcoal is used.

(iii) Potassium thiocyanate is used in the estimation of $CuSO_4$.

(iv) Citric acid is used in the limit test for
iron.

(v) Barium chloride is added in the estimation
of NaOH.

(vi) Ethyl alcohol is used in the test of chloride
in $KMnO_4$.   (12)

(b) Complete the following reactions and balance
the equation.

(i) $BaO_2 + H_3PO_4 \longrightarrow$

(ii) $CuSO_4 + KI \longrightarrow$

(iii) $Ca(OCl)Cl + CH_3COOH \longrightarrow$

(iv) $NaI + H_2SO_4 + MnO_2 \longrightarrow$

(v) $Ca(OH)_2 + Cl_2 \longrightarrow$

(vi) $KOH + Br_2 \longrightarrow$ (6)
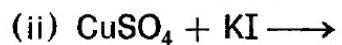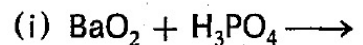
2. (a) List the official compounds of calcium giving their formulae, medicinal uses and synonyms if any. (4)

(b) Give the method of preparation, test for purity and assay of any one calcium compound. (4+2+6)

3. Describe the assay of the following compounds giving the detailed method, chemical reactions and interpretation of results.

(a) Yellow mercuric oxide.

(b) Ointment of sulphur.

(c) Hydrogen peroxide.

(d) Iodine solution. (4 × 4 = 16 marks)

4. (a) How are the following tests carried out ?

(i) Presence of Bromides and Iodide in sodium chloride.

(ii) Acid consuming capacity of aluminium hydroxide gel.

(iii) Gritty particles in light kaolin.

(iv) Sulphates in magnesium carbonate.

(v) Presence of dextrose and fructose in calcium gluconate. (10)

(b) Name three haematinic agents and give the preparation of any one of them. (6)

5. (a) What is dipole moment of a drug molecule ? Correlate the dipole moment and insecticidal activities of any one common insecticide. (6)

(b) What is optical activity ? Give its importance in medicinal chemistry. (6)

(c) Define pH. Give a mathematical expression. Give its importance in biological systems and pharmaceutical practice. (6)

6. (a) State phase rule and explain the difference between the stable and metastable equilibrium by reference to the vapour pressure curves of liquid water system. (8)

(b) State Kohlrausch's law of ionic mobilities. Give its applications. (4)

(c) Whata are buffers and buffered isotonic solutions ? (4)

7. (a) State and explain laws of elevation of boiling point. (6)

(b) Derive the relationship between elevation of boiling point and molarity of the solution. (5)

(c) Explain the term heat of reaction. Write briefly on the factors influencing the heat of reaction. (5)

8. (a) What is solubility product ? Explain any four important applications. (8)

(b) Define degree of dissociation. Explain why a strong electrolyte does not obey Ostwald's dilution law.

(c) Define the terms : (4)

(i) Osmotic coefficient.

(ii) Turgon pressure.

(iii) Molal elevation constant.

(iv) Depression of freezing point. (4)

APRIL - 1991

034

FIRST B.Pharm DEGREE EXAMINATION, APRIL 1991.

Paper I — PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Three hours.   Maximum : 100 marks.

Answer Question Nos. 1 and 5 and any other FOUR questions.

1.   (a) Answer the following :

(i) Why is Brominated Hydrochloric Acid AsT used instead of Stannated Hydrochloric Acid AsT in the Limit Test for Arsenic for metallic carbonates ?

(ii) Why is MgO added in the preparation of milk of magnesia ?

(iii) Crude commercial alum is not suitable for medicinal purposes. Why ?

(iv) Why is Light Kaolin tested for coarse particles ? How is this test performed ?

(v) Why should the ferric solution be added to alkali and not vice versa in the preparation of Ferric Ammonium Citrate ?

(vi) What are the conditions for the formation of Light and Heavy Magnesium Carbonate ?

(b) Complete the following reactions and balance the equation :

(i) $CaS_2 + CaS_2O_3 + HCl \longrightarrow$

(ii) $Ca(OCl)Cl + Na_2CO_3 \longrightarrow$

(iii) $KIO_3 + I_2 + HCl \longrightarrow$

(iv) $K_2MnO_4 + CO_2 \longrightarrow$

(v) $HgCl_2 + NaOH \longrightarrow$

(vi) $Na_2CO_3 + Ca(OH)_2 \longrightarrow$.

2.   (a) List the official compounds of Zinc giving their formulae, medicinal uses and synonyms if any.

(b) Give the method of preparation, test for purity and assay of any one Zinc compound.

3.   Describe the assay of the following compounds giving the method and chemical reactions involved :

(a) Ammonium chloride.

(b) Sodium hydroxide.

(c) Borax.

(d) Iodised oil injection.

4.   (a) How are the following tests carried out ?

(i) Presence of chloride and cyanogen in Iodine.

(ii) Test for bromate in sodium bromide.

(iii) Test for acid absorption for Magnesium trisilicate.

2

(iv) Test for chlorides and sulphates in potassium permanganate.

(v) Test for free chlorine in hydrochloric acid.

(vi) Test for coarse particles in Light Kaolin.

(b) Name three antacids and give the preparation of any one of them.

5. (a) What is Radioactivity ? Explain the terms half-life, radioactive disintegration constant.

(b) Give the applications of Isotopes in medicine.

(c) What is meant by Exothermic and Endothermic Reactions. Give two examples of each.

6. (a) State and explain Henry's Law regarding the solubility of a gas in a liquid.

(b) Discuss the vapour pressure composition curve of a mixture of two liquids miscible in all proportions.

(c) What is Fractional Distillation ?

7. (a) What is meant by the term colligative properties of a dilute solution. Name such properties. How is osmotic pressure determined in a dilute solution ?

(b) Describe the cryoscopic method of determining the molecular weight of a substance in solution.

(c) State Raoult's Law for elevation of boiling point.

8. (a) Explain the effect of pressure, temperature and catalyst on chemical equilibrium.

(b) State Faraday's Law. What is meant by equivalent conductivity of an electrolyte. How does it vary with dilution ?

(c) Explain the terms :

(i) Transport number.

(ii) Buffers.

(iii) Indicators.

3

034A

FIRST B.PHARM. EXAMINATION, APRIL 1991.

PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Two and a half hours.   Maximum : 60 marks.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

All questions carry equal marks.

1.   Enumerate the official compounds of *Calcium* with medicinal uses. Give the method of preparation and assay of any *two*.

2.   What is Buffer Solution ? Derive Henderson Hasselbalch equation. Explain Buffer Capacity. Comment on pharmaceutical buffers.

3.   What are Colligative properties ? Define Molal elevation constant. Give its application. Describe Beckmann's method for the determination of Molecular weight of a substance.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

All questions carry equal marks.

4.   Complete the following reaction with equations :

(a) $Na_2B_4O_7 + HCl + H_2O$

(b) $CuSO_4 + KI$.

5.   Give the method of *preparation* and *uses* of Ferric Ammonium Citrate.

6.   Explain the principle involved in the assay of Magnesium-trisilicate I.P.

7.   Give the principle of the limit test for *Iron*.

8.   Write a note on *Laws of Mass action*.

9.   Give an account of *Solubility Product* and its application.

10.   Explain briefly the principle behind *Steam Distillation*. What are its applications.

11.   Define *Ionic Mobility* and *Transport Number*. Briefly discuss Faraday's Law of Electrolysis.

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034

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1991.

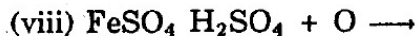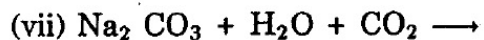Paper I --- PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours   Maximum : 100 marks

Answer Quesion No. 1 and 5 and
any other FOUR questions.

1.   (a)   Explain the terms Radio activity, Radio nucleides and
Nuclear reactions with examples.   (6)

      (b)   Complete the following reactions and balance them :
                                                              (8)

            (i) $KIO_3 + I_2 + HCl \longrightarrow$

            (ii) $Ag NO_3 + NH_4 Cl \longrightarrow$

            (iii) $P_2 O_5 + C \longrightarrow$

            (iv) $B_2O_3 + H_2O \longrightarrow$

            (v) $NaOH + Br_2 \longrightarrow$

            (vi) $KOH + MNO_2 + O \longrightarrow$

            (vii) $Na_2 CO_3 + H_2O + CO_2 \longrightarrow$

            (viii) $FeSO_4 H_2SO_4 + O \longrightarrow$
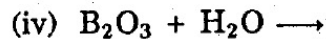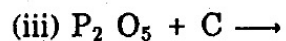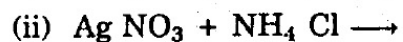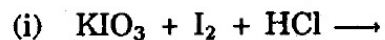
      (c)   Write a short note on radio isotopes.   (4)

1

2. (a) List four official compounds of sodium giving their formulae, medicinal uses and synonyms if any. (4)

(b) Give the method of preparation, test for purity and assay of (i) magnesium sulphate (ii) milk of magnesia as per I.P. 1985 method. (12)

3. (a) Describe the principle involved in the following test for purity (i) Chlorides in potassium permanganate (ii) Iodate in potassium iodide (iii) Phosphine and hydrogen sulphide in carbon-di-sulphide (iv) Arsenic in antimony compounds. (3 × 4)

(b) Name any three antacids and give the preparation of any one of them. (4)

4. How are the following reagents prepared? Illustrate their use in Pharmaceutical Analysis and Synthetic Organic Chemistry.

(a) Karl Fischer reagent

(b) Boron tri-fluoride

(c) Perchloric acid

(d) Benedicts reagent. (4 × 4)

5. (a) State Raoult's law of lowering vapour pressure. Derive an expression to show the relation between the molecular weight of a solute and the relative lowering of vapour pressure. (6)

(b) Describe an experiment to determine the molecular weight of a solute in solution by cryoscopic method. (8)

(c) 15 gms of a substance dissolved in 150 gms of water lowered its freezing point by 1.2°C. Find the molecular weight of the substance. The cryoscopic constant is 1.85°C for 1000 gms of water. (4)

6. (a) State and explain Ostwald's dilution law. Give the limitations, experimental verification and application of this law. (10)

(b) Write notes on : (6)

(i) Isotonic solution

(ii) Henry's law of gas solubility.

7. (a) Write an account of the solubility of liquids in liquids with example. (8)

(b) What do you understand by the term transport number of an ion? How is it experimentaly determined? (8)

8. (a) Explain the terms : (i) molar volume (ii) surface tension (iii) parachor. Discuss the uses of parachor. (10)

(b) What are buffer solutions? Explain the principle and working of buffer solutions. (6)

2

3

034A

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1991.

(New Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Two and a half hours.   Maximum : 60 marks.

Answer Sections A and B in separate answer books.

SECTION A — (2×15=30 marks)

Answer any TWO questions only.

1.   List official compounds of *Iron*. Indicate their therapeutic uses. Give the method of preparations and assay of any *two*.

2.   What are radioisotopes ? Highlight their application in the field of Medicine. Discuss briefly Geiger-Muller Counter.

3.   What is order of a reaction ? Derive an equation for first order reaction kinetic. Define half life. Explain under what order of reaction radioactive decay occurs.

SECTION B — (6×5=30 marks)

Answer any SIX questions only.

1.   Complete the following reaction with equations :

(a) $KMnO_4 + H_2O_2 + H_2SO_4$

(b) $Na_2S_2O_3 + I_2$.

2.   Give the method of *preparation* and *uses* of Ammoniated Mercury.

3.   Explain the principle involved in the assay of Calcium Lactate I.P.

4.   Give the principle of the limit test for Arsenic.

5.   Bring out the importance of the following reagents in synthetic organic chemistry, with relevant examples :

(a) Lithium Aluminium Hydride

(b) Thionyl Chloride.

6.   Dwell briefly on coordination compounds of Pharmaceutical interest.

7.   Define Colligative Property. Discuss briefly the biological and pharmaceutical aspects of Osmotic Pressure.

8.   Explain common Ion effect and its application.

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[RS 5 2 8]

FIRST B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours   Maximum : 100 marks

Question Nos. 1 and 5 are compulsory.

Answer any other FOUR questions.

1.   (a) What are primary standard substances? Give
examples and write their merits and demerits.   (5)

(b) Discuss in brief the theory of acid and base indicators.
                                                        (4)

(c) What happens when (give reactions) $(6 \times 1\frac{1}{2} = 9)$

(i) Sodium chloride is treated with conc. Sulphuric
Acid.

(ii) Sodium thiosulphate is added to iodine solution.

(iii) Copper Sulphate is treated with Sodium hydroxide.

(iv) Barium chloride is treated with Sodium Sulphate.

(v) Chlorine gas is passed through a solution of
Calcium hydroxide.

(vi) Sodium hydroxide is added to a solution of
magnesium sulphate.

1. (a) Give the composition and uses of the following : (10)

    (i) Dragendorff's Reagent.

    (ii) Hagers Reagent.

    (iii) Wagners Reagent.

    (iv) Nesslers Reagent.

(b) Explain the use of Lead Acetate cotton plug in the Arsenic limit test. (3)

(c) Discuss the preparation and uses of Lithium Aluminium hydride. (3)

3. Describe the assay principle and use of any FOUR of the following : (4 x 4 = 16)

    (a) Boric acid.

    (b) Zinc oxide.

    (c) Magnesium Sulphate.

    (d) Copper Sulphate.

    (e) Mercuric chloride.

4. Explain the method of preparation and uses of any FOUR of the following : (4 x 4 = 16)

    (a) Thionyl Chloride.

    (b) Boron Trifluoride.

    (c) Magnesium Oxide.

    (d) Sodium metabisulphite.

    (e) Potassium Iodide.

5. (a) Define the following : (2 x 6 = 12)

    (i) Electrochemical equivalent.

    (ii) Transport number.

    (iii) Equivalent conductance.

    (iv) Faraday.

    (v) Phase.

    (vi) Optical activity.

(b) Give an account of modern theory of strong electrolytes. (6)

6. (a) State the assumptions of kinetic theory of gases and deduce the kinetic equation for gases.

(b) Why do real gas deviate from ideal behaviour? (8 + 8)

7. Write short notes on : (4 x 4 = 16)

    (a) Dipole moment.

    (b) Refractive Index.

    (c) Solubility of liquids in liquids.

    (d) X–rays and crystal structure.

8. (a) State the first and second law of thermodynamics.

(b) What are isothermal and adiabatic processes?

(c) Define entropy and enthalpy. (6 + 5 + 5)

[R S 5 3 3]

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Three hours.   Maximum : 90 marks.

Two and a half hours
for Sections A and B   Sections A and B : 60 marks.

Answer Sections A and B in separate answer books.
Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1.   (a) What do you mean by colligative property ? Give four examples. Explain the method to determine the molecular weight by any one of the colligative properties.

(b) Why some time abnormal molecular weights are obtained by the above method ?

2.   (a) What is Transport Number ? Explain a suitable method to determine transport number.

(b) State Faraday's Laws of electrolysis.

3.   (a) Enumerate the pharmaceutically important calcium compounds along with their formulas and use.

(b) Give an account of the preparation, properties, assay and use of Magnesium sulphate.

4.   Write brief notes on :

(a) Co-precipitation and post precipitation.

(b) Limit test for Arsenic.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5.   Complete the following equations

(a) $NaCl + NH_4HCO_3 \rightleftharpoons$

(b) $NH_3 + HgCl_2 \rightarrow$

(c) $MnO_2 + KOH + KClO_3 \rightarrow$

6.   Give reasons for the following :

(a) Hydrogen peroxide is stored in acidic medium.

(b) Presence of some amount of sodium carbonate in sodium hydroxide is allowed as per I.P. 66.

(c) A test for particle size of Kaolin is given in Indian pharmacopoeia.

(d) Barium sulphate reagent contains some amount of potassium sulphate.

7.   Explain the assay and use of Bleaching powder.

8.   What is the composition of Benedict's reagent and Nessler's reagent ? Mention their uses.

9.   Explain the synthetic methods and use of Hydrogen peroxide.

10.   Explain phase rule as applicable to water system.

11.   Explain the construction and use of any one reference electrode.

12.   Write notes on energy of activation.

13.   Define the following :

(a) Heat of formation.

(b) Heat of Reaction.

(c) Heat of Neutralisation.

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[P R 1 4 6]

FIRST B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours　　　　　　　　Maximum : 100 marks

Question Nos. 1 and 5 are compulsory.

Answer any other FOUR questions.

1.　(a)　Explain the methods of preparation of Boric acid.
　　　　　　　　　　　　　　　　　　　　(5)

　　(b)　Explain the methods of standardization of $KMnO_4$.
　　　　　　　　　　　　　　　　　　　　(4)

　　(c)　What happens when (give reaction)　$(1\frac{1}{2} \times 6 = 9)$

　　　　(i)　Sodium bicarbonate is treated with dilute hydrochloric acid.

　　　　(ii) Chlorine is passed through a solution of Potassium Iodide.

　　　　(iii) Copper sulphate is treated with Potassium iodide in presence of acetic acid.

　　　　(iv)　Bleaching powder is treated with dilute Acetic acid.

　　　　(v)　Barium chloride is treated with Sodium sulphate.

　　　　(vi) Sodium thiosulphate is added to Iodine solution.

2.　(a)　Give the composition and use of the following :　(10)

　　　　(i)　Nesslers reagent.

　　　　(ii)　Karl Fishcer reagent.

　　　　(iii) Mayers reagent.

　　　　(iv)　Hydrazine.

　　(b)　Explain the application of radio isotopes in pharmacy.
　　　　　　　　　　　　　　　　　　　　(4)

　　(c)　Write in brief about coordination compounds of analytical importance.　(2)

3.　Describe the assay principle and use of the following :
(Answer any FOUR)　　　　　　　$(4 \times 4 = 16)$

　　(a)　Calcium gluconate.

　　(b)　Ferrous sulphate.

　　(c)　Hydrogen peroxide.

　　(d)　Sodium carbonate.

　　(e)　Silver nitrate.

[PR 146]

4. Explain the method of preparation and uses of any FOUR of the following : (4 × 4 = 16)

    (a) Ferric ammonium citrate.

    (b) Thiomyl chloride.

    (c) Potassium permanganate.

    (d) Sodium metabisulphite.

    (e) Boron Trifluoride.

5. (a) Define the following : (6 × 2 = 12)

    (i) Dipole moment.

    (ii) Critical solution temperature.

    (iii) Sublimation.

    (iv) Refractive Index.

    (v) Phase.

    (vi) Electrochemical equivalent.

    (b) Give an account of modern theory of strong electrolytes. (6)

6. (a) What are limit tests? Explain its significance and its importance in pharmaceutical compounds. (6)

    (b) Describe Conttrell's method of determining the elevation of boiling point of solvent and molecular weight of solute. (5)

    (c) Define Transport number. (5)

[PR 146]

7. Write notes on : (4 × 4 = 16)

    (a) Energy of activation.

    (b) Solubility of liquids in liquids.

    (c) Optical activity.

    (d) First order reaction.

8. Define law of mass action. Explain the effect of temperature, pressure and addition of inert gas on chemical equilibrium, taking any one chemical reaction as example. (16)

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[PR 150]

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours
for Sections A and B   Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

1.   Define osmosis and osmotic pressure.   Explain two meth-
ods for the determination of osmotic pressure.   Give an account
of utility of osmotic pressure in Pharmacy.

2.   (a)   Derive an equation for equilibrium constant when 'a'
moles of Hydrogen and 'b' moles of I_2 reacts to give Hydrogen
Iodide, in gaseous state as follows :

$$I_{2\,(g)} + H_{2\,(g)} \rightleftharpoons 2\,HI_{(g)}.$$

(b)   What is the effect of change in volume, pressure and
addition of an inert gas on the equilibrium?

1

3. (a) Name the pharmaceuticaly important potassium compounds. Write the preparation, properties, assay and uses of Potassium Iodide.

   (b) How will you detect the following impurities?

   (i) Limit test for sulphate in potassium permanganate.

   (ii) Test for Iodides and Bromides in Sodium Chloride.

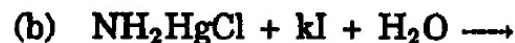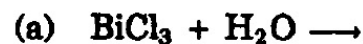4. (a) What do you mean by co-ordination compounds and co-ordination number?

   (b) Give an account of the Chemistry and use of any three co-ordination compounds.

   (c) Explain the principles of limit test for Iron.

   SECTION B — (6 × 5 = 30 marks)

5. Explain the assay and use of calcium gluconate.

6. Complete the following equations :

   (a) $BiCl_3 + H_2O \longrightarrow$

   (b) $NH_2HgCl + kI + H_2O \longrightarrow$

   (c) $Na_2CO_3 + Ca(OH)_2 \longrightarrow$

7. Write notes on the preparation and use of Iodine.

8. Give reason for the followings :

   (a) Sodium hydroxide is stored in well closed container.

   (b) Sodium carbonate is added in the assay of Sodium metabisulphite.

   (c) Iodine is stored in well closed container.

   (d) Magnesium sulphate is added in the assay of Calcium gluconate.

9. Name four inorganic astringent antiseptics. Explain the preparation of any one of them.

10. What is Karl Fisher Reagent? Explain its use with reactions.

11. Write notes on steam distillation and its advantage.

12. What is buffer? Give examples. Explain the action of any one buffer system.

13. Explain solubility product and its significance.

———————

ND 561 - NOVEMBER - 1994

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper I — PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours
for Sections A and B   Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Write notes on the followings :

    (a) Atomic orbitals

    (b) Pharmaceutical and Medical applications of Radio-active isotopes

    (c) Medicinal uses of co-ordination compounds

    (d) Position of hydrogen in the long form of periodic table.

2. (a) Enumerate the official compounds of potassium along with their use.

    (b) Write the preparation, assay, use and storage conditions of

    (i) Hydrogen peroxide (ii) Magnesium sulphate.

3. (a) Explain the theory of steam distillation tage over ordinary distillation.

    (b) Explain the fractional distillation based on "Boiling temperature – composition" – curve for ideal and non-ideal solutions.

4. (a) State the Faraday's Laws of electrolysis.

    (b) Explain the Hess Law with suitable examples.

    (c) Define optical activity and specific rotation.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Write the principle and salient features of Limit test for sulphate.

6. Explain the preparation and use of disodium edetate.

7. Complete and balance the following equations :

    (a) $H_3 ASO_3 + H_2 \longrightarrow$

    (b) $NH_4 NO_3 \longrightarrow$.

8. Write the methods of preparation of precipitated sulphur. Name the allotropic forms of sulphur.

9. Write the preparation, assay and use of sodium bicarbonate.

10. How will you carry out the following tests for purity

    (a) Reducing sugar in calcium gluconate

    (b) Limit test for sulphate in potassium permanganate.

1

2

11.   Define osmosis, osmotic pressure, isotonic solutions and paratonic solutions.

12.   Define distribution law and mention its significance.

13.   Write notes on solubility products and its significance.

———————

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulation)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Section A and B : 60 marks

for Section A and B

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Give an account on the followings :

    (a) Ostwald's theory of indicators.

    (b) Adsorption indicators.

2. Enumerate the official compounds of calcium. Mention
their use. Write the preparation, properties and assay of any
two of them.

3. (a) What do you understand by co-ordination compounds?
Write their use in analysis and in Medicine.

    (b) Write the preparation and use of EDTA and
dimercaprol.

1

[ND 565]

4. (a) Give an account of the source of Impurities in pharmaceuticals with suitable examples.

(b) Write the principle and the salient features of limit test for Iron.

SECTION B — (6 × 5 = 30 marks)

5. Write notes on the followings :

(a) Principle quantum number.

(b) Sodium Iodide (^{131}I).

6. Write the preparation, assay and use of Hydrogen peroxide.

7. Complete and balance the following equations :—

(a) $KIO_3 + C \xrightarrow{\text{heat}}$

(b) $CaCl_2 + Na_2CO_3 \rightarrow$

8. How will you detect CO_2 and CO in oxygen.

9. Explain the preparation and assay of copper sulphate.

10. How will you carry out the followings tests for purity :

(a) Iodides and Bromides in sodium chloride.

(b) Reducing sugars in Ferrous sulphate.

11. What is Karl Fischer's reagent? Write the application of Karl Fischer reagent with chemical equations.
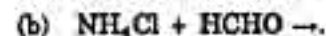
2

[ND 565]

12. Write the use of the followings :

(a) Mayers reagent (b) Silica gel (c) Periodic acid (d) Lithium aluminium hydride (e) Titanous chloride.

13. Complete and balance the following equations : —

(a) $NaIO_3 + NaHSO_3 \rightarrow$

(b) $NH_4Cl + HCHO \rightarrow.$

————

3

[SB 564]   APRIL - 1995

First B. Pharm Degree Examination

(New Regulations)

Paper I - PHARMACEUTICAL INORGANIC AND PHYSICAL CHEMISTRY

Time : Three hours   Maximum : 90 Marks

Two and an half hours
for Section A and B   Section A and B : 60 marks

Answer Section A and B in Separate answer books

Answer Section C in the answer sheet provided

SECTION A $(2 \times 15 = 30)$

Answer any TWO questions

1. Describe in detail the limit test for Arsenic
(15)

2. Write short essays on the following :
   a) Radiopharmaceuticals
   b) Give the method of preparation and uses of following reagents
   i) Lithium Aluminium Hydride
   ii) Thionyl chloride
   iii) Sodedetate $(6 + 9)$

3. a) Distinguish between isothermal and adiabatic process
   b) State first law of Thermodynamics. Give its mathematical statement and explain each term involved $(7 + 8)$

4. a) Explain the term, molar elevation constant of a solvent
   b) Describe an experimental method for the determination of the molecular weight of non volatile solute by the elevation of boiling point $(7 + 8)$

SECTION—B $(6 \times 5 = 30)$

Answer any SIX

5. Explain the terms and their importance
   a) Surface tension
   b) Viscosity
   c) Parachlor

6. Explain the colligative properties of solutions

7. State and explain faradays ; law of electrolysis

8. a) What is a Buffer ? Give example
   b) Explain the mechanism of buffer action
   c) What is meant by buffer capacity

9. What is 'autocatalysis' and 'Negative catalysis' ? Explain with examples

10. Enumerate the official compounds of Iron along with their chemical formulae, uses and synonyms if any,. Describo the preparation of ferric Amm citrate

11. Write the name and chemical composition of one inorganic compound used for each of the following
    a) Ophthalmic Antibacterial
    b) Diuretic
    c) Expectorant
    d) Antacid
    e) Preservative

12. Write the chemical name, formula and uses of
    a) Blue vitreol
    b) Plaster of paris
    c) Soda ash

13. Describe the preparation, assay and uses of Pot Iodide

First B. Pharm DEGREE EXAMINATION

(Revised Regulations)

Paper I—PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Sec A & B : 60 marks
for section A and B

Answer Sections A and B in separate answer books
Answer Section C in the answer sheet provided

SECTION — A   (2X15 = 30)

Answer any TWO questions

1. a) Discuss the sources of impurities in pharma-
      ceuticals with relevant examples

   b) Describe in detail the limit tests for lead and
      heavy metals.   (5+5+5)

2. Write the chemistry involved in the following tests
   for purity
   a) Oxidising substances in oxygen
   b) Acidity and stability in Hydrogen peroxide
   c) Iodides and Bromides in sodium chloride
   d) Coarse particles in kaoline   (3+5+4+3)

3. Write short essays on the following
   a) Radiopharmaceuticals
   b) Theories of nutralisation indicators   (8+7)

4. Write the methods of preparation and illustrate the
   uses of the following reagents in organic synthesis
   and/or in pharmaceutical analysis
   a) Thionyl chloride
   b) Lithium Aluminium Hydride
   c) Nesslers reagent
   d) Sodium edetate   (4+4+3+4)

SECTION — B   (6 X 5 = 30)

Answer any SIX questions

5. Write the principle and procedure for the limit test
   for Iron.

6. Write a brief note on
   a) Valency
   b) Ferric citrate

7. Enumerate the official compounds of calcium along
   with their chemical formulae, uses and synonyms
   if any

8. Describe the chemistry involved in the preparation
   and uses of
   a) Potassium Iodide
   b) Milk of magnesia

9. Discuss the principle involved in the assay and use
   of the following
   s) Copper sulphate
   b) Ferrous sulphate

10. Name one chemical compound each for the
    following uses
    a) Antacid
    b) Emetic
    c) Local anti infective
    d) Germicide
    e) Radioopaque substance

11. Write the chemical name, formula and uses of
    a) Epsom salt
    b) Salt cake
    c) Plaster of paris

12. Discuss the preparation, assay and use of
    Hydrogen peroxide.

13. Describe the typical monograph of the pharma-
    copoce

MB 701

NOVEMBER - 1995

FIRST B.PHARM DEGREE EXAMINATION
(New Regulations)

Paper I - PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time: Three hours   Max. Marks: 90
Two and a half an hour
for Sec. A and B   Sec. A and B : 60 marks

Answer Sections A and B in separate answer books
Answer Section C in the answer sheet provided

SECTION - A   (2 X 15 = 30)

1. a). Discuss the sources of impurities in pharmaceuticals.
   b). Write a note on the tests for purity described in pharmacopoea.
   c). Describe in detail the principle and the procedure of the Limit Test for Lead.

Write short essays on the following
   a). Modern concept of atomic structure
   b). Co-ordination compounds
   c). i). Benedicts qualitative & quantitative reagent
   ii). Periodic acids

3. Differentiate between
   a). Isothermal and adiabatic processes
   b). Reversible and irreversible processes
   c). Isolated, closed and open systems.

4. Define Raoult's law and establish it. Explain how it can be used for the experimental determination of the molecular weight of a dissolved substance.

SECTION - B   (6 X 5 = 30)

5. Explain the terms
   a). Molecular refraction
   b). Specific rotation

6. Explain the terms 'solubility products' and 'common ion effect' Write a note on their applications.

7. a). Distinguish between the terms adsorption and absorption
   b). Write the applications of adsorption in pharmacy.

8. Discuss the statement "Multistep extraction is more efficient and economical than a single step extraction".

9. Write a short essay on 'Fractional distillation'

10. Enumerate the official compounds of calcium along with their chemical formulae, uses and synonyms if any.

11. Describe the chemistry involved in preparation and uses of
    a). Potassium Iodide
    b). Milk of Magnesia

12. Discuss the principle involved in the assay and uses of
    a). Copper sulphate
    b). Ferrous sulphate

13. Write the chemical name, formulae and uses of
    a). Glauber's salt
    b). Tarter emetic
    c). Epsom salt

NOVEMBER - 1995

SECTION - A   (2X15=30)

Answer any Two questions

1. Describe in detail the limit test for Arsenic   (15)

2. Write the chemistry involved in the following tests for purity

   a) Sucrose and reducing sugars in calcium gluconate   (4)
   b) Carbonmonoxide in oxygen   (4)
   c) Acid absorption by magnesium trisilicate   (4)
   d) Chloride in potassium permanganate   (3)

3. Write short essays on the following   (3×5=15)

   a) Modern concept of atomic structure
   b) Typical pharmacopoeal monograph
   c) Co ordination compounds

4. Write the method of preparation and illustrate the uses of the following reagents in organic synthesis and/or in pharmaceutical analysis   (5+3+3+4)

   a) Benedicts Qualitative and Quantitative reagents
   b) Periodic Acid
   c) Mayor's reagent
   d) Boron Trifluoride

SECTION—B

Answer any SIX questions

5. Explain the terms
   a) Radioactivity
   b) Radioisotopes

6. Discuss the principle of the limit tests for sulphate and iron

7. Enumerate the official compounds of oxygen and describe the method of preparation and assay of any one of them

8. Discuss the principle involved in the assay of
   a) Sulphur ointment
   b) Boric acid

9. Describe the preparation and uses of the following
   a) Calcium gluconate
   b) Phosphoric acid

10. Name one inorganic compound each for the following uses
    a) Astringent
    b) Preservative
    c) Ophthalmic Antibacterial
    d) Diuretic and
    e) Expectorant

11. Write the chemical name, formula and use of
    a) Tartar Emetic
    b) Blue vitreol
    c) Gypsum

12. Enumerate the official compounds of Iron along with their chemical formula, use and synonym if any. Describe the preparation of Ferric Ammonium citrate

13. Discuss the preparation, assay and use of chlorinated lime.

APRIL - 1996

FIRST B. PHARM DEGREE EXAMINATION

(New Regulations)

Paper I - PHARMACEUTICAL INORGANIC AND
PHYSICAL CHEMISTRY

Time: Three hours   Max.Marks: 90

Two and a half an hour
for Sec. A and B   Sec.A and B : 60
                                     marks
     Answer Any TWO questions

Answer Sections A and B in separate
     answer books.

Answer Section C in the answer sheet
               provided.

     SECTION A   (2 x 15 = 30)

1. (a) Define Osmotic pressure. What
       are the methods used to
       determine the osmotic pressure.
       Explain briefly how molecular
       weight can be found.   3+5+7

2. (a) Enumerate the sources of
       impurities in the
       pharmaceuticals.

   (b) Describe how the limit test for
       lead is carried out?

   (c) Give the significance of, test for
       purity.   (5+5+5)

3. (a) Give an account of the merit of
       periodic Table (Modern) Mandelef.

   (b) Gravimetric method.   (8+7)

4. (a) Name the official compounds for calcium.

   (b) Give the method of preparation of any
       three calcium compounds.

   (c) Outline the principle involved in the
       assay of any three calcium compounds.

                              (5+5+5)

     Answer any SIX questions

     SECTION B   (6 x 5 = 30)

5. Define surface tension. Describe any one
   method for determining surface tension.

6. Define refractive index. How is it
   determined.

7. State the Law of Mass Action. Describe
   the effect of temperature and pressure
   according to Le Chatlier's principle.(2+3)

8. Explain the term
   (a) Solubility product
   (b) common ion effect   (2+3)

9. Give the method of preparing
   (a) Hydrogen peroxide
   (b) precipated sulphur   (2+3)

10. Write the principle and proceedure in the
    assay of (a) Copper sulphate (b) Zinc
    Oxide.   (2+3)

11. Give the chemical name and formulae of
    (a) Salt Petre (b) Alum   (2½+2½)

12. Write the chemical equation and method
    for the preparation of (a) Ammoniated
    Mercury (b) Ferrous sulphat (2+3)

13. State the law of Faraday
    Explain transport numb   (3)

OCTOBER - 1997

[MS 701]

Sub. Code : 4161

FIRST B.Pharm. DEGREE EXAMINATION

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours	Maximum : 90 marks
Two and a half hours	Sec. A & B : 60 marks
for Sec. A and Sec. B	Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Mention the various sources of impurities in pharmaceutical substances. (5)

    (b) What is the principle involved in the limit test for arsenic? How do you carry out this limit test? (10)

2. (a) What are radiopharmaceuticals? (3)

    (b) Discuss briefly the pharmaceutical applications of

        (i) Ferric citrate (^{59}Fe)

        (ii) Cyanocobalamin (^{57}Co & ^{60}Co) (2 × 6 = 12)

1

[MS 701]

3. Write the principle involved in the assay of : (5 × 3 = 15)

   (a) Hydrogenperoxide (I.P.)

   (b) Boric acid (I.P.)

   (c) Zinc oxide (I.P.)

   (d) Calcium carbonate (I.P.)

   (e) Ammonium chloride (I.P.)

4. Write the chemistry involved in the following tests for purity : (5 × 3 = 15)

   (a) Iodides and chlorides in potassium bromide.

   (b) Sulphates and sulphites in sodium thiosulfate.

   (c) CO_2 and CO in oxygen.

   (d) Sucrose and reducing sugars in calcium gluconate.

   (e) Magnesium and alkali metals in calcium chloride.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Write the chemical structure of the following : (5 × 1 = 5)

   (a) EDTA.

   (b) Penicillamine.

   (c) Ammoniated mercury.

   (d) Antimony potassium tartrate.

   (e) Sodium thiosulfate.

2

[MS 701]

6. Write the method of preparation and following :

   (a) Benedict's reagent.

   (b) Lithium aluminium tetrahydride.

7. Write the pharmaceutical uses of the following : (5 × 1 = 5)

   (a) Aluminium hydroxide.

   (b) Bismuth subnitrate.

   (c) Talc.

   (d) Potassium permanganate.

   (e) Silver nitrate.

8. Write the preparation and principle involved in the assay of Ferrous sulphate.

9. What is a chelating agent? Write the pharmaceutical uses of Dimercaprol. (2)

10. Write the principle involved in the limit test for lead.

11. Write the method of preparation and uses of : (2 × 2½ = 5)

   (a) Sodium hypochlorite

   (b) Alum.

12. Mention an inorganic compound which is used in the preparation of medicated shampoos. Write its uses.

13. How is boric acid prepared? What are its uses?

3

[SV 701]   **Sub. Code : 4161**

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B   Section C : 30 marks

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1.   (a) What are limit tests? What are the factors to be
considered while fixing the limit for impurities?   (5)

      (b) Describe the principle and procedure involved in
the following :   (10)

        (i)   Dithizone method for Lead limit test.

        (ii) Limit test for Iron.

2.   Explain the principle involved in the assay of :
                                              (5 × 3 = 15)

      (a) Bleaching powder.

      (b) Boric acid.

      (c) Magnesium trisilicate.

      (d) Zinc oxide.

      (e) Ferrous sulphate.

3. (a) How is iodine prepared from seaweeds? Mention the official solutions of iodine with their composition and uses.

$(2 + 3 = 5)$

(b) Give one method of preparation, assay and uses of :

$(2 \times 5 = 10)$

(i) Hydrogen peroxide (ii) Potassium iodide.

4. Write the chemistry involved in the following purity tests :

$(5 \times 3 = 15)$

(a) Acid absorption test for Magnesium trisilicate.

(b) Ferric iron and reducing sugars in ferrous gluconate.

(c) Ozone and carbon monoxide in oxygen.

(d) Iodides and Bromides in Sodium Chloride.

(e) Coarse particles in light kaolin.

SECTION B — $(6 \times 5 = 30$ marks$)$

Answer any SIX questions.

5. What are Radio pharmaceuticals? Mention the pharmaceutical applications of

(a) Sodium iodide (I^{131}).

(b) Cyanocobalamin (Co^{60}).

$(1 + 4 = 5)$

6. Write any four official compounds of Iron with their chemical formula and uses. Mention the method of preparation and properties for any one of them.

$(2 + 3 = 5)$

2 [SV 701]

7. Write the method of preparation and uses of

(a) Lithium aluminium hydride.

(b) Thionyl chloride.

$(2 \times 2\frac{1}{2} = 5)$

8. What is the difference between Mohr's method and Volhard's method of assay? Explain giving suitable examples.

9. Write short notes on :

$(2 \times 2\frac{1}{2} = 5)$

(a) Purified Talc.

(b) Theory of indicators.

10. Name any two inorganic drugs for each of the following :

(a) Expectorant

(b) Emetic

(c) Cathartic

(d) Antidote for alkaloid poisoning

(e) Antiseptic.

11. Give the method of preparation, properties and uses of Nitrous oxide.

$(2 + 2 + 1 = 5)$

12. Describe the importance of calcium to the body. List out the official compounds of calcium in I.P and mention their formula and uses.

$(2 + 3 = 5)$

13. What is a chelating agent? Write the pharmaceutical uses of EDTA and Dimercaprol.

$(1 + 4 = 5)$

3 [SV 701]

OCTOBER - 1998

[SM 701]   Sub. Code : 4161

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B   Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1.   Explain the use of the following :

    (a) Stannous chloride in the limit test for arsenic.

    (b) Mercuric chloride paper in the limit test for arsenic.

    (c) Ammonia in the Iron limit test.

    (d) Lithium Aluminium hydride.

    (e) Sodium editate.

2.   Define terms with suitable examples :
    (a) Normality
    (b) Molarity.
    (c) Solubility.
    (d) Standardization.
    (e) Common iron effect.

3.   Describe the method of preparation and uses of

    (a) Hydrogen peroxide.

    (b) Bleaching powder.

    (c) Ferric ammonium citrate.

4.   How are the following tests for purity carried out :

    (a) Iodides and Bromides in sodium chloride.

    (b) Iron in sodium meta bisulphate.

    (c) Acidity and stability in Hydrogen peroxide.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5.   Write the preparation and uses of

    (a) Calcium gluconate.

    (b) Copper sulphate.

6.   Discuss the assay procedures of

    (a) Ammonium chloride.

    (b) Ferrous sulphate.

7.   Write short notes on any TWO :

    (a) Lithium Aluminium hydride.

    (b) Silica gel.

    (c) Sodium thiosulphate.

2   [SM 701]

OCTOBER - 1998

8. Write the pharmaceutical uses of the following :

$(5 \times 1 = 5)$

(a) Sodium chloride.

(b) Potassium permanganate.

(c) Bismuth oxy chloride.

(d) Yellow mercuric oxide.

(e) Aluminium hydroxide gel.

9. Write the chemical structure of the following :

(a) Antimony potassium tartarate.

(b) Ferrous gluconate.

10. (a) What is a chelating agent?

(b) Write the pharmaceutical uses of dimercaprol.

11. Write the method of preparation and uses of Magnesium trisilicate.

12. Write notes on :

(a) Inorganic antiseptics.

(b) Choice of indicator in assays.

13. (a) Define Radio activity.

(b) What are radio pharmaceuticals?

14. Write the principle involved in the assay of

(a) Hydrogen peroxide I.P.

(b) Ammonium Chloride I.P.

15. Discuss briefly the pharmaceutical applications of

(a) Ferric citrate 59 Fc

(b) Cyano cobalamine 57_{is} and 60_{co}.

16. Write the method of preparation of

(a) Sodium thiosulphate.

(b) Alum.

17. Mention various sources of impurities in pharmaceutical substances.

[SG 701]   Sub. Code : 4161

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B   Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1.   (a) Explain the term purity. How impurity occur in pharmaceutical substances?

     (b) Describe the Arsenic limit test and explain the principle involved. Give the importance of limit test in pharmaceutical preparation.

2.   Enumerate   the official compounds of Iron. Describe in detail the method of preparation, chemical properties, test for purity and pharmaceutical uses of any two.

3. Give the principle and procedure involved in the assay of

(a) Copper sulphate (b) Ammonium chloride (c) Calcium gluconate (d) Potassium permanganate.

4. Write short notes on :

(a) Purified talc

(b) Limit test for iron

(c) Sodium Iodide (I^{131}) solution

(d) Pharmacopoeal monograph.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Write the preparation and medicinal uses of
(a) Chlorinated lime

(b) Ferric Ammonium Citrate.

6. Write the principles involved in the assay of

(a) Boric acid

(b) Magnesium Sulphate.

7. What is the use of Lithium aluminium hydride? Illustrate your answer with equation.

8. Give a brief procedure to prepare Benedict's reagent. State its use in quantitative analysis.

9. What are chelating agents? Explain with examples.

10. Give identification test for the following
(a) Chlorides (b) Ammonia.

11. Write short notes on :

(a) Volhard's method (b) Complexometric titration.

12. Describe the chemistry involved in the preparation and uses of

(a) Potassium iodide (b) Milk of Magnesia.

13. Discuss the preparation assay and use of Hydrogen peroxide.

[KA 701]   Sub. Code : 4161

FIRST B.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

PHARMACEUTICAL INORGANIC CHEMISTRY

Time : Three hours   Maximum : 90 marks

Two and a half hours   Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B.   Section C : 30 marks

Answer Section A and B in separate answer books.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Enumerate pharmaceutically important Magnesium compounds. Give the preparation, test for purity and assay of any two official Magnesium compounds.   (2 + 2 + 2 + 3 + 3)

    (b) Give the formula and assay of boric acid.   (3)

2. (a) What are the sources of impurities in pharmaceutical substances?   (3)

    (b) Explain in detail the limit tests for

    (i) Iron and

    (ii) Arsenic.   (6 + 6 = 12)

3. (a) How are the following tests for purity carried out?

    (i) Coarse particles in Kaolin

    (ii) Neutralising capacity of aluminium hydroxide.   (6)

    (b) Give the applications of the following in Pharmacy and Pharmaceutical Analysis :

    (i)   EDTA

    (ii) Dimercaprol

    (iii) Penicillamine.   (3 × 3 = 9)

4. (a) Discuss the periodic table based on the modern concept of atomic structure.   (6)

    (b) Give the preparation and uses of the following in Pharmaceutical analysis :

    (i)   Karl Fischer's reagent

    (ii) Lithium Aluminium hydride

    (iii) Titanous chloride.   (3 × 3 = 9)

SECTION B — (6 × 5 = 30 marks)

5. Give the preparation of Ferric ammonium citrate.

6. Give the chemical name, formula, uses of

    (a) Tartar Emetic

    (b) Gypsum. $(2\frac{1}{2} + 2\frac{1}{2})$

2   [KA 701]

7. Complete the equations and balance :

(a) $Fe_2(SO_4)_3 + H_2O \rightarrow$

(b) $HgCl_2 + NH_3 \rightarrow$

(c) $K_2MnO_4 + Cl_2 \rightarrow$

(d) $Na_2CO_3 + 2SO_2 + H_2O \rightarrow$

(e) $Na_2CO_3 + H_2O + CO_2 \rightarrow$ (5)

8. How is KI determined in Aqueous solution of iodine? What is Povidone–Iodine?   (3 + 2)

9. What happens when bleaching powder is exposed to air? Give the equation. Give the assay of borax. (2 + 3)

10. How is Selenium sulphide prepared? Give the uses.   (5)

11. What are alums? Give their composition. Give some chemical incompatibilities of alum.   (5)

12. How is oxygen tested for the presence of CO_2 and oxidising substances?   (5)

13. Write a note on :

(a) Roentgen.   (1)

(b) Sodium iodide (^{131}I) injection.   (4)

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APRIL - 2000

[KB 701]   **Sub. Code : 4161**

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours	Maximum : 90 marks
Two and a half hours	Sec. A & Sec. B : 60 marks
for Sec. A and Sec. B	Section C : 30 marks

Answer Sections A and B in separate Answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1.   (a) Write a note on tests for purity prescribed by Indian Pharmocopoea.

(b) Describe the procedure for the limit test of Iron and Sulfate.   (5 + 10 = 15)

2.   Outline the principle and method of assay of the following :   (3 × 5 = 15)

(a) Sodium bicarbonate

(b) Boric acid

(c) Magnesium trisilicate

(d) Calcium gluconate

(e) Copper sulfate.

3.   Give a detailed method of preparation and uses of the following :   (3 × 5 = 15)

(a) Alum

(b) Hydrogen peroxide

(c) Thionyl chloride

(d) Sodium thiosulfate

(e) Perchloric acid.

4.   Write a note on the tests for the

(a) Presence of CO_2 and CO in oxygen and acidity and stability in Hydrogen peroxide.

(b) Explain the term radioisotope with examples. Describe the medicinal uses of

Sodium iodide (I^{131}) and Sodium phosphate (P^{32}).   (9 + 6 = 15)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5.   Comment on the following :

(a) $BaCl_2$ is added in the estimation of NaOH.

(b) Glycerol is used in the assay of boric acid.

(c) EDTA is a common titrant in complexometry.

(d) In the assay of NaCl, potassium chromate is used as indicator.

(e) Heating should be avoided while preparing yellow mercuric oxide.

2   **[KB 701]**

6. Give one example each for the following category of compounds.

    (a) Diuretic

    (b) Antacid

    (c) Antioxidant

    (d) Anticoagulant

    (e) Preservative.

7. Mention the formula and uses of the following :

    (a) Ferrous Gluconate

    (b) Precipitated sulfur

    (c) Thionyl chloride

    (d) Alum

    (e) Copper sulfate.

8. Give the method of preparation and uses of

    (a) Hydrogen peroxide

    (b) Milk of Magnesia.

9. Complete the equations.

    (a) $BaCl_2 + Na_2SO_4 \rightleftharpoons$?

    (b) $2NaI + 3H_2SO_4 + MnO_2 \rightleftharpoons$?

    (c) $6KOH + 3I_2 \rightleftharpoons$

    (d) $NH_4HCO_3 + NaCl \rightleftharpoons$

    (e) $LiH + AlCl_3 \rightleftharpoons$

10. What is the difference between

    (a) Iodine tincture and Lugol's solution

    (b) HCl and aqua regia

    (c) Soda lime and lime water

    (d) Sodium dihydrogen phosphate and Disodium hydrogen phosphate

    (e) Light MgO and Heavy MgO.

11. What happens when

    (a) Potassium perchloride and H_2SO_4 are distilled under reduced pressure

    (b) Barium peroxide is added to cool dil H_2SO_4.

    (c) PCl_3 is treated with Na_2SO_4

    (d) Na_2CO_3 is added to a hot solution of phosphoric acid.

    (e) Ethylene diamine, formaldehyde and NaI are mixed together.

12. Give the method of preparation and uses of Alumina and Silica gel.

13. Give the preparation and pharmaceutical applications of Dimer caprol and penicillamine.