

APRIL - 2001

[KD 701]

Sub. Code : 4161

FIRST B.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

Paper 1 — 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 Section B in the
same Answer Book.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What are the sources of Impurities. Explain with examples?
(b) Explain the Lead Dithizone Limit test. (7 + 8)
2. Explain the method of Assay of the following compounds :
 - (a) Oxygen
 - (b) Titanium Dioxide
 - (c) Calcium Gluconate. (5 + 5 + 5)

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

- (a) Precipitated sulphur
- (b) Phosphoric acid
- (c) Lead monoxide
- (d) Nitrous oxide
- (e) Boric acid. (5 × 3 = 15)

4. (a) Explain the theory of indicators.
(b) Give the principle of Gravimetric analysis and explain the assay of any one official compound by Gravimetric analysis. (7 + 8)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the principle of Red-Ox titrations.
6. Give in detail the pharmaceutical applications of Radiopharmaceuticals.
7. How will you test the following :
 - (a) CO₂ and CO in oxygen
 - (b) Oxidising substances in Oxygen?

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8. How are the following impurities tested :
- (a) Iodides and Bromides in sodium chloride
 - (b) Iron in sodium metabisulphite?
9. How are the following reagents prepared :
- (a) Karl Fischer Reagent
 - (b) Benedicts Reagent.
10. How is Sodium Edetate purified and Assayed?
11. How is 0.1 N sodiumthiosulphate solution prepared and standardised by using a primary standard?
12. What happens when
- (a) Boric acid is heated
 - (b) Arsine gas is passed through mercuric chloride paper
 - (c) Carbondioxide is passed through lime water
 - (d) Ferrous ion is treated with thioglycollic acid
 - (e) Alum is added to Plaster of Paris.
13. Give the reason for the following :
- (a) Potassium iodide is added in the limit test of Arsenic
 - (b) Nitrobenzene is added in the Volhard's method of assay of chlorides

(c) Traces of potassium sulphate and alcohol are added in the preparation of Barium Sulphate Reagent.

(d) Sublimed sulphur is used for the preparation of sulphur ointment.

(e) Microbial limit is prescribed in Milk of Magnesia.

NOVEMBER - 2001

[KE 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 hour

Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B

Section C : 30 marks

Answer Sections A and B in same Answer Books.

Answer Section C in the Answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Write briefly on the titrimetric methods involving neutralisation, oxidation-reduction and precipitation reactions. Discuss the theory and choice of neutralisation indicators. (4 + 6)

(b) Write notes on the limit test for Iron. (5)

2. (a) What is Karl-Fischer reagent? How is it standardised? Write the applications and its limitations? (9)

(b) Write preparation and uses of Lithium Aluminium Hydride. (6)

3. (a) List the official compounds of sodium and give their molecular formula. Write the preparation and uses of Sodium Bicarbonate.

Explain how the total alkalinity (calculated as NaOH) and Na_2CO_3 content is estimated in the pharmacopoeial assay of sodium hydroxide. (4 + 3 + 4)

(b) Give the method of preparation of Milk of Magnesia and write on the microbial limit. (4)

4. (a) Write preparation and assay of

(i) Potassium Permanganate

(ii) Nitrous Oxide. (10)

(b) Write notes on the periodic classification of elements. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions :

5. Comment on the following : (5)

(a) In the assay of calcium gluconate 5 ml of 0.05 M magnesium sulphate is added.

(b) Ferrous solution is employed in the assay of ferrous sulphate.

(c) A test on 'loss on drying' is included in the monograph of sodium salicylate.

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(d) In the test for ferric iron in ferrous gluconate, potassium iodide is added.

(e) Sodium metabisulphite is employed as a pharmaceutical aid.

6. Write the method of preparation and uses of volumetric solutions of Titanous chloride. (5)

7. Discuss the different parts of a pharmacopoeial monograph. (5)

8. (a) Write on the test for

(i) Iodide and

(ii) Bromide in sodium chloride.

(b) Write on test for Neutralising capacity of Aluminium Hydroxide Gel. $(2\frac{1}{2} + 2\frac{1}{2})$

9. Complete the following reactions : (5)



10. Write the molecular formula of the following : (5)

(a) Sodium metabisulphite.

(b) Magnesium Trisilicate.

(c) Lithium Aluminium Hydride.

(d) Thionyl chloride.

(e) Perchloric acid.

11. Explain the Limit test for lead. (5)

12. Write on the preparation of volumetric solutions of sodium thiosulphate and sodium edetate and their applications in pharmaceutical analysis. (5)

13. What are coordination compounds? Write the structure and applications of E.D.T.A, Dimercaprol and Penicillamine. (5)

[KG 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 & Sec. B

Section C : 30 marks

Answer Sections A and B in same Answer Books.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What are co-ordination compounds? Classify with suitable examples. Write the structure and applications of E.D.T.A., Dimercaprol and penicillamine. (2 + 9)

(b) What is Radioactivity? Write the applications of Radio Pharmaceuticals. (4)

2. (a) What is periodic acid? How is it prepared? Write the applications with suitable examples. (9)

(b) Write the preparation of volumetric solutions of titanous chloride. What are its applications? (6)

3. (a) Write the preparation and assay of
(i) Iron and Ammonium citrate
(ii) Sodium Aurothiomalate. (10)

(b) Write the preparation and assay of oxygen. (5)

4. (a) Write the preparation and assay of
(i) Sodium stibogluconate
(ii) Sodium thiosulphate. (10)

(b) Explain the limit test for Arsenic. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Comment on the following :

(a) In the assay of Boric acid, neutralised glycerin is added.

(b) A test on 'water' content is included in the monograph of sodium phosphate.

(c) Phenolphthalein solution and also methyl orange solution indicators are employed in the assay of sodium hydroxide.

(d) Iodide free starch solution and sodium nitrite solution are added in the test for iodide in sodium chloride.

(e) Potassium cupri-tartrate solution is added in the test for reducing sugars in calcium gluconate.

6. Write the method of preparation and uses of Lithium Aluminium Hydride.
7. Discuss briefly the different methods employed in the limit test for heavy metals.
8. Write on the test for :
(a) Carbon dioxide and
(b) Carbon monoxide in oxygen.
9. Complete the following :
(a) $\text{Ca}(\text{OH})_2 + \text{Na}_2\text{CO}_3 \rightarrow$
(b) $\text{HF} + \text{Na}_2\text{CO}_3 \rightarrow$
(c) $\text{Fe}^{++} + \text{CH}_2\text{SHCOOH} \rightarrow$
(d) $\text{AgNO}_3 + \text{NH}_4\text{SCN} \rightarrow$
(e) $\text{ZnO} + \text{H}_2\text{SO}_4 \rightarrow$
10. Write the structural formula of the following :
(a) E.D.T.A.
(b) Calcium gluconate
(c) Dimercaprol
(d) Penicillamine
(e) Ferrous Fumarate.
11. Discuss the four quantum numbers. What is Aufbau process?
12. Write the preparation and uses of Nessler's reagent and Mayer's reagent.
13. Discuss the different sources of impurities in pharmaceuticals.
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[KH 701]

Sub Code : 4161

FIRST B.Pharmacy 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 Section B in the SAME
Answer Books.

Answer Section C in the Answer Sheet provided.

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

Answer any TWO questions.

1. (a) Explain the details about the typical
Monograph of Drugs in I.P.

(b) Give a monograph of IP of any one compound.
(10 + 5)

2. (a) Explain the Theory of Indicators.

(b) Explain the principle of gravimetric method of
analysis. (8 + 7)

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3. (a) What are the sources of Impurities in pharmaceutical substances? Explain with examples.

(b) Explain the Limit test for Arsenic. (7 + 8)

4. Explain the pharmaceutical applications of Radio pharmaceuticals

(a) Cyanocobalamin (Co^{58})

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

(c) Ferric Citrate (Fe^{59})

(d) Sodium Phosphate (P^{32}) (4 + 4 + 4 + 3)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the principle of Red-Ox titrations with suitable example.

6. Give the preparation, assay and uses of Calcium Gluconate.

7. How will you test the following :

(a) Acidity and stability in Hydrogen peroxide

(b) Magnesium and alkali metals in Calcium Chloride.

8. How the following impurities are detected :

(a) Iodides and Bromides in Chlorides

(b) Iodides and Chlorides in Bromides.

9. List the official compounds of Iron and Aluminium.

10. Give the preparation, assay and uses of leadmonoxide.

11. How the following reagents are prepared and give its uses :

(a) Karl Fischer's Reagent

(b) Perchloric acid.

12. Explain the Dithizone Limit test for Lead.

13. Explain the applications of co-ordination compounds.

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[KI 701]

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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

Half an hour : Section C

Answer Sections A and B in the SAME Answer Book.

Answer Section C in the Answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Write the official compounds of Magnesium and give their molecular formula. Write the method of preparation, assay and uses of magnesium sulphate and magnesium carbonate. (10)

(b) Write notes on limit test for sulphates. (5)

2. (a) What are co-ordinated compounds? Write the structure and applications of E.D.T.A., Dimercaprol and Penicillamine. (8)

(b) Write preparation and uses of Boron Trifluoride. (7)

3. (a) Write preparation, assay and uses of calcium compounds. (10)

(b) Write a note on Radioactivity. (5)

4. (a) Write briefly on alloys involving oxidation and precipitation reactions. (10)

(b) Write the preparation and assay of zinc sulphate. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the limit test for Arsenic. (5)

6. Write briefly on sources of Impurities in pharmaceutical substances. (5)

7. Write the preparation, assay and uses of copper sulphate. (5)

8. (a) Write the test for

(i) Lead in zinc chloride

(ii) Neutralising capacity of aluminium hydroxide.

(b) Write a note on the test for cyanides in potassium permanganate. (2 + 2 + 2)

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9. Complete the following reactions : (5)
- (a) $\text{HgO} + \text{HNO}_3 \rightarrow$
 - (b) $\text{KHC}_4\text{H}_4\text{O}_6 + \text{Sb}_2\text{O}_3 \rightarrow$
 - (c) $\text{KIO}_3 + \text{KI} + \text{HCl} \rightarrow$
 - (d) $\text{NaF} + \text{Pb}(\text{NO}_3)_2 \rightarrow$
 - (e) $\text{Ca}(\text{OH})_2 + \text{Na}_2\text{CO}_3 \rightarrow$
10. Write the method of preparation and uses of silicon compounds. (5)
11. Write briefly on Radio active isotopes and its pharmaceutical applications. (5)
12. Discuss the periodic table on the modern concept of atomic structure. (5)
13. Write the preparation and uses of perchloric acid. (5)
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OCTOBER - 2003

[KJ 701]

Sub. Code : 4161

First B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two hours and forty minutes Sec. A & Sec. B : 70 marks
for Sec. A and Sec. B Section C : 20 marks

Twenty minutes : Section C

Answer Sections A and B in the **SAME** Answer Book.

Answer Section C in the Answer Sheet provided.

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

Answer any TWO questions.

1. (a) What are the sources of impurities in pharmaceuticals? (7)
(b) Describe in detail the limit test for iron and write the chemical reactions. (8)
2. (a) What are the different theories of indicators? Explain. (7)
(b) Write the principle and procedure involved in the assay of halides by Fajan's method of precipitation titrations. (8)

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3. (a) Explain the preparation, storage and assay of oxygen gas. (8)

(b) Write a note on Radio pharmaceuticals. (7)

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

4. Write the method of preparation and uses of the following :

(a) Karl-Fischer Reagent

(b) Benedicts Reagent.

5. Write the principle and procedure involved in the limit test of Arsenic.

6. Explain the preparation and assay of Hydrogen peroxide.

7. Explain the terms

(a) Nuclei

(b) Isotopes

(c) Isobars

(d) Curie

(e) Half life.

8. Write the chemistry involved in the purity test of the following :

(a) Carbon dioxide and Carbon monoxide in oxygen

(b) Sucrose and reducing sugars in calcium gluconate.

9. How do you prepare Boric acid from Borax. Write the principle involved in the assay of Boric acid.

10. Write the procedure involved in the gravimetric assay of calcium.

11. Write the method of preparation, assay and uses of sodium meta bisulphite.

12. Write a note on EDTA.

13. Describe the method of preparation of sublimed sulphur.

[KK 701]

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FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — PHARMACEUTICAL INORGANIC
CHEMISTRY

Time : Three hours Maximum : 90 marks

Sec. A & B : Two hours and Sec. A & B : 70 marks
forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer Section A and B in the SAME Answer Book.

Answer M.C.Q. in the Answer Sheet provided.

SECTION A

Answer any TWO questions : (2 × 15 = 30)

Each question carries 15 marks.

1. Write the sources of the impurities in pharmaceuticals? Describe how you perform the limits tests for lead and iron.

2. Give the methods of assays of the following compounds :

- (a) Strong solution of ammonia
- (b) Sodium carbonate
- (c) Boron
- (d) Titanium.

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

- (a) Silica gel
- (b) Sodium edetate
- (c) Hydrogen peroxide
- (d) Lithium aluminium hydride
- (e) Perchloric acid.

4. Write a note on the test for

- (a) Neutralising capacity of aluminium hydride
- (b) Cyanides in potassium permanganate
- (c) Iodides and bromides in sodium chloride
- (d) Microbial limit in milk of magnesia.

SECTION B

Answer any EIGHT of the following : (8 × 5 = 40)

Each question carries 5 marks only.

Short notes :

5. Write a note on the test for

- (a) Setting property of plaster of paris
- (b) Magnesium and alkali metals in calcium chloride.

6. Write a note on the applications of following radio pharmaceuticals in pharmacy.

- (a) Cyanocobalamine
- (b) Ferric citrate.

7. Write a note on coordination compounds and give the method of preparation and uses of Pencillamine.

8. Give the examples each of the following category of compounds :

- (a) Astringents
- (b) Dentrifriles
- (c) Acidifying agents
- (d) Protectives and Adsorbents
- (e) Antacids.

9. Write the principle involved in limit test for chloride and how determination of chloride in sodium sulphate.

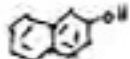
10. Comment on the following :

- (a) NH_4Cl is added in the assay of boric acid
- (b) Potassium thiocyanate is added at the beginning in the assay of copper sulphate
- (c) Thioglycolic acid is added in the limit test for iron.
- (d) Sodium thiosulphate is prepared only in boiled water.
- (e) Silver compounds should be stored away from light.

11. Give the formula and uses of the following :

- (a) Bleaching powder
- (b) Alumina
- (c) Borotrifluoride
- (d) Magnesium trisilicate
- (e) Potassium permanganate.

12. Complete the following reactions :

- (a) $\text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + 2\text{SO}_2 \rightleftharpoons$
- (b) $\text{NaHC}_2\text{O}_4 + \text{NaOH} \rightleftharpoons$
- (c) $\text{H}_2\text{SO}_4 + \text{Na}_2\text{CO}_3 \rightleftharpoons$
- (d) $\text{NaOH} + \text{HCl} \rightleftharpoons$
- (e)  + $\text{CH}_3\text{O}^- \text{K}^+ \longrightarrow$

13. (a) What is the hydronium ion concentration of a solution of hydrochloric acid having a pH of 4.52.

(b) An acid having $\text{PK}_a = 4$ was present in a solution having $\text{pH} = 3$, what is the percent ionization of the acid.

14. Explain the limit test for arsenic.

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CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two hours and forty minutes Sec. A & Sec. B : 70 marks
for Sec. A and Sec. B

Twenty minutes for M.C.Q.

M.C.Q. : 20 marks

Answer Sections A and B in the **SAME** Answer Book.

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

Answer any TWO questions.

1. (a) What are radio-pharmaceuticals? Discuss important radio pharmaceutical used in therapy and diagnosis. (6 + 4)

(b) In brief discuss the theory of Valency. (5)

2. (a) What is purity and test for purity? Explain the principle and procedure for the limit test for Arsenic with necessary diagram and chemical reactions. (2 + 6 + 2)

(b) How do you detect chloride and sulphate in potassium permanganate? (5)

3. (a) Define Gravimetry. Explain the terms co-precipitation and post-precipitation with examples. How do you estimate calcium by gravimetry. (2 + 2 + 4 + 2)

(b) How do you determine the neutralising capacity of aluminium hydroxide gel. (5)

4. (a) List the official compounds of iron and give their molecular formulae. How do you prepare and carry out the assay of ferrous gluconate. (6 + 4)

(b) Write a note on sources of impurities in pharmacopoeial substances.

SECTION B — ($8 \times 5 = 40$ marks)

Answer any EIGHT questions.

5. Comment on the following : (5)

(a) throglycollic acid is used in iron limit test

(b) nitric acid is used in chloride limit test

(c) glycerol in the assay of boric acid

(d) methyl orange and not phenolphthalein indicator is used in the assay of Sodium Carbonate

(e) 5 ml of 0.05 M magnesium sulphate is added in the assay of Calcium gluconate.

6. Write the method of preparations and uses of the following compounds :

(a) Perchloric acid

(b) Lithium aluminium hydride. ($2\frac{1}{2} + 2\frac{1}{2}$)

7. Define the terms :

- (a) pharmacopoeia
- (b) assay
- (c) monograph
- (d) official compound
- (e) equivalent weight.

8. Write the molecular formula and uses of the following :

- (a) Alumina
- (b) Titanous chloride
- (c) Hydrogen peroxide
- (d) Periodic acid
- (e) Thionyl chloride.

9. (a) Write the principle and procedure involved in the limit test for heavy metals.

(b) Write a note on milk of magnesia. ($2\frac{1}{2} + 2\frac{1}{2}$)

10. (a) How do you standardise the given sodium hydroxide solution (approximate normality is 0.1 N).

(b) How do you standardise iodine solution (approximate normality is 0.05 N)? ($2\frac{1}{2} + 2\frac{1}{2}$)

(5) 11. Write the structure of uses of E.D.T.A., Dimercaprol Penicillamine, ferroin and Sodium thiosulphate. (5)

12. How do you carry out the test for purity of the following compounds? ($2\frac{1}{2} + 2\frac{1}{2}$)

- (a) Plaster of Paris
- (b) Calcium gluconate.

(5) 13. Write on the test for : ($2\frac{1}{2} + 2\frac{1}{2}$)

- (a) Iodides and bromides in sodium chloride
- (b) Carbondioxide and Carbon monoxide in oxygen.

14. Complete the following reactions :

- (a) $\text{Na}_2\text{CO}_3 + \text{Ca}(\text{OH})_2 \rightleftharpoons$
- (b) $\text{HCl} + \text{NaOH} \rightleftharpoons$
- (c) $\text{Ca}(\text{OH})_2 + 2 \text{HCl} \rightleftharpoons$
- (d) $\text{CO}_3^{2-} + \text{H}_2\text{O} \rightleftharpoons$
- (e) $\text{H}_2\text{PO}_4^- + \text{OH}^- \rightleftharpoons$