

AUGUST - 2006

[KP 740]

Sub. Code : 4231

SECOND B.Pharm. DEGREE EXAMINATION.

(Regulations 2004)

**Paper II — PHARM ANALYSIS AND
PHYSICAL CHEMISTRY**

Time : Three hours

Maximum : 90 marks

**Theory : Two hours and
forty minutes**

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and B Separately.

SECTION A

(PHARMACEUTICAL ANALYSIS)

I. Long Essay :

(1 × 20 = 20)

Write any ONE question.

1. Explain the theories of Indicators and selection of Indicators for acid-base titration. What do you mean by mixed indicators and Universal indicators? Mention their use.

2. What are the types of complexometric titrations? Explain them with examples. Add a note on complexometric titration of mixture of metal ions including the use of masking and demasking agents.

II. Short notes :

(3 × 5 = 15)

Write any THREE questions.

1. Write notes on the types of errors in analysis with examples. How are they minimised?

2. How will you prepare and standardise acetic perchloric acid volumetric solution? What are the precautions to be taken in the preparation.

3. Write notes on redox indicators.

4. Explain co-precipitation and post precipitation. How do they affect gravimetric analysis?

5. Write notes on Oxygen flask method.

SECTION B

(PHYSICAL CHEMISTRY)

I. Long Essay :

(1 × 20 = 20)

Write any ONE question.

1. What do you mean by colligative properties? Give examples. Explain the determination of molecular weight by 'elevation of boiling point' including derivation of molal elevation constant and determination of elevation of boiling point.

AUGUST - 2006

2. (a) What is rate of reaction? Name the types with examples and derive equation for first order reaction.

(b) Explain Hess's Law of constant heat of summation.

II. Short notes : (3 × 5 = 15)

Write any THREE questions.

1. Explain Nernst's Distribution Law and the effect of dissociation and association of a molecule on partition co-efficient.

2. Define adsorption and Chemisorption. Explain the factors affecting adsorption.

3. Write notes on activation energy.

4. Write notes on Joule-Thomson effect.

5. What do you mean by internal energy and enthalpy of a system. Derive the relation between ΔH and ΔE .

FEBRUARY - 2007

[KQ 740]

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(Regulations 2004)

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CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and B Separately.

PART I — PHARMACEUTICAL ANALYSIS

SECTION A

Answer any ONE

I. Long Essay : (1 × 20 = 20)

1. (a) What is buffer solution and explain about the buffer mixture of a weak acid and a weak base and its salts. (10)

(b) Write a note on Henderson's equation. (10)

2. (a) Give the mechanism of diazotization reaction and write a note on detection of end point in diazotization titration. (10)

(b) Selecting suitable examples bring out the importance of ceric ammonium sulphate titrant in pharmaceutical analysis. (10)

Answer any THREE

II. Short notes : (3 × 5 = 15)

1. Write a note on Kjeldhal's method of nitrogen estimation.

2. Explain the preparation and standardization of acetous perchloric acid volumetric solution, including the precautions to be taken.

3. What is co-precipitation and post precipitation and give notes on various steps involved in gravimetric analysis.

4. Explain the use of the masking and demasking agents in complexometry.

5. Write a note on theories of acid-base indicators with examples.

FEBRUARY - 2007

PART II — PHYSICAL CHEMISTRY

SECTION B

Answer any ONE

I. Long essay : (1 × 20 = 20)

1. (a) 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.

(b) Explain nernst distribution law and briefly explain its applications.

2. (a) Define order of reaction and specify the types. Derive integrated rate law equation for first order.

(b) Explain on Debye-Huckel theory.

Answer any THREE

II. Short notes : (3 × 5 = 15)

1. Define phase rule and explain the terms phase, component and degree of freedom.

2. Calculate the enthalpy of formation of benzene from the following data



3. State the second law of thermodynamics and explain the principle and working of carnot's cycle.

4. Differentiate physical and chemical adsorption and describe the factors influencing adsorption.

5. State and illustrate Hess's law of constant heat summation.

August-2007

[KR 740]

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CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and B Separately.

SECTION A

(PHARMACEUTICAL ANALYSIS)

I. Long Essay : (1 × 15 = 15)

Write any ONE question.

1. (a) Explain the theories of indicators and selection of indicators for acid base titrations.

(b) Explain in detail the Henderson-Hasselbalch equation.

2. (a) Give the theory of Non-aqueous titrations. Explain the preparation and standardisation of acetons perchloric acid including the precautions to be taken.

(b) What is the mechanism involved in the diazotisation reaction and write a note on detection of end point in diazotisation titrations.

II. Short notes :

(4 × 5 = 20)

Answer any FOUR questions.

1. What is Gasometry? Give the procedure for the assay of oxygen.

2. Explain the various steps involved in Gravimetric analysis.

3. Write notes on Kjeldhal method of nitrogen estimation.

4. How do you determine the Acid value and saponification value of the given oil.

5. Give a note on masking and demasking agents.

6. Theories of acid-base indicators with examples.

August 2008

SECTION B

(PHYSICAL CHEMISTRY)

III. Long Essay : (1 × 15 = 15)

Write any ONE question.

1. (a) State and explain Hess's law of constant heat summation.

(b) Define

(i) Enthalpy of neutralisation.

(ii) Enthalpy of combustion.

2. What are colligative properties? Give examples. Explain any two in detail.

IV. Short notes : (4 × 5 = 20)

Answer any FOUR questions.

1. Explain Carnots cycle.

2. What is Joule-Thomson effect? Give a short note.

3. What are different types of adsorption isotherms. Explain.

4. State the phase rule and its limitations and advantages.

5. Explain the concept of Activation energy.

6. Define phase rules and explain the terms phase, component and degree freedom.

February-2008

[KS 740]

Sub. Code : 4231

SECOND B.Pharm. DEGREE EXAMINATION.

(Regulation 2004)

Paper II — PHARMACEUTICAL ANALYSIS AND
PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Theory : Two hours and
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and B Separately.

SECTION A

(PHARMACEUTICAL ANALYSIS)

I. Long Essay : (1 × 15 = 15)

Write any ONE question.

1. (a) Explain the basic concepts of neutralisation titration. (7)
- (b) How will you estimate the following?
 - (i) A mixture containing CO_3^{2-} and HCO_3^- .
 - (ii) Polyprotic acid. (8)
2. (a) Write the methodology of different steps involved in gravimetric analysis giving reasons. (10)
- (b) What are masking and demasking agents? What is their significance in drug assay? (5)

II. Short notes : (4 × 5 = 20)

Answer any FOUR questions.

1. What is a buffer? What are the applications of buffer solution in pharmacy and medicine?
2. Write the importance of quality control of drugs.
3. Write the method of preparation of tetrabutyl ammonium hydroxide. How is it useful in titration of a weak acid?
4. What is redox potential? What is the application of this parameter in pharmacy?
5. How will you assay an oral suspension containing $Mg(OH)_2$ and $Al(OH)_3$?
6. Explain oxygen flask combustion method of estimation of drugs quoting any one example.

SECTION B

(PHYSICAL CHEMISTRY)

I. Long Essay : (1 × 15 = 15)

Write any ONE question.

1. (a) Define adsorption. Explain the various factors influencing adsorption.
(b) State Raoult's law. Briefly describe the determination of molecular weight by Rast's Camphor method.

2. (a) Define the order of reaction. Explain the various methods for determining the order of reaction.

(b) Explain Hess's law of constant heat of summation.

II. Short notes : (4 × 5 = 20)

Answer any FOUR questions.

1. State and explain Henry's law for solubility of a gas in liquid.
2. Define phase rule. Explain the terms phase, component and degree of freedom.
3. Explain adiabatic expansion of an ideal gas.
4. Write in detail about the Bomb calorimeter used for the measurement of heat of reaction.
5. State Nernst's distribution law. What are its applications?
6. Define adsorption isotherm. Explain Freundlich adsorption isotherm.

August 2008

[KT 740]

Sub. Code : 4231

SECOND B.Pharm. DEGREE EXAMINATION.

(Regulations 2004)

Paper II — PHARM ANALYSIS AND PHYSICAL
CHEMISTRY

Q.P. Code 564241

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately.

PART I

(PHARMACEUTICAL ANALYSIS)

SECTION A

I. Long Essay : (1 × 20 = 20)

Write any ONE question.

1. (a) Explain the theory of acid-base indicators. (10)
- (b) Write notes on masking and demasking agents. (10)

2. (a) Explain the theory of Redox titration. (10)
- (b) Write notes on modified volhards method. (5)
- (c) What are the factors which affect solubility of precipitate? (5)

SECTION B

II. Short notes : (4 × 5 = 20)

Answer any FOUR questions.

- (1) Write notes on non-aqueous solvents.
- (2) Discuss the estimation of nitrogen by kjeldhal method.
- (3) Give any two methods to minimisation of errors.
- (4) Write notes on co-precipitation and post precipitation.
- (5) Write notes on dead stop end point.

SECTION C

III. Short answers : (2 × 2½ = 5)

Answer any TWO questions.

- (1) Define Iodine value.
- (2) What is Gay lussac star method?
- (3) Define Redox potnetial.

August 2008

PART II

(PHYSICAL CHEMISTRY)

SECTION A

I. Long Essay : (1 × 20 = 20)

Answer any ONE question.

1. (a) Define the term colligative properties. (5)
(b) State Raoult's law. (5)
(c) How is the molecular mass of a soluble determined from elevation of boiling point? (10)
2. (a) State second law of thermodynamics. (5)
(b) Describe Carnot's theorem. (15)

SECTION B

II. Short notes : (4 × 5 = 20)

Answer any FOUR questions.

- (1) Explain the partition coefficient with limitation.
- (2) Write notes on Hess law of heat of summation.

(3) What are the factors which affect the rate of chemical reaction?

(4) Write note on molar heat capacity.

(5) Write notes on abnormal molecular weight of electrolytes.

SECTION C

III. Short answers : (2 × 2½ = 5)

Answer any TWO questions.

- (1) Define Entropy.
 - (2) What is absorption?
 - (3) Define order of reaction.
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February 2009

[KU 740]

Sub. Code: 4231

SECOND B.PHARM. DEGREE EXAMINATION

(Regulation 2004)

Candidates Admitted from 2004-05

Paper II – PHARM ANALYSIS AND PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately

PART – I

(PHARMACEUTICAL ANALYSIS)

I. Essay Questions : Answer any ONE question (1 x 20 = 20)

1. a) Explain the theory of redox titration.
b) Write notes on standard oxidation potential.
2. a) Explain the basic concept of acid base titration.
b) Write notes on common ion effect.
c) Write the importance of acids and bases in pharmacy.

II. Write Short Notes : Answer any FOUR questions (4 x 5 = 20)

1. Masking and demasking agent.
2. Explain the kjeldahl method of nitrogen estimation.
3. How will you assay of oxygen.
4. What is redox potential? Write the application of parameter in pharmacy.
5. Write notes on Fajan's method?

III. Short Answers: Answer any TWO questions (2 x 2.5 = 5)

1. Define buffer solution.
2. Mohrs method.
3. Define Iodometry.

PART – II
(PHYSICAL CHEMISTRY)

I. Essay Questions : Answer any ONE question (1 x 20 = 20)

1. a) State phase rule. Explain the various terms involved in it. Write its applications.
b) Explain Hess's law of constant heat of summation.
2. a) State first law of Thermodynamics.
b) Define the order of reaction. Explain various methods for determining the order of reaction.

II. Write Short Notes : Answer any FOUR questions (4 x 5 = 20)

1. Discuss briefly Langmuir's theory of adsorption and its application.
2. Write in detail about the bomb calorimeter used for the measurement of heat of reaction.
3. Write the factor affecting the rate of chemical reaction.
4. Explain the partition coefficient.
5. Write the relation between ΔH and ΔE .

III. Short Answers: Answer any TWO questions (2 x 2.5 = 5)

1. Define Enthalpy.
2. Rate of reaction.
3. Vant hoff equation.

August 2009

[KV 740]

Sub. Code: 4231

SECOND B.PHARM. DEGREE EXAMINATION

(Regulation 2004)

Candidates Admitted from 2004-05

Paper II – PHARM ANALYSIS AND PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately

PART – I

(PHARMACEUTICAL ANALYSIS)

I. Essay Questions : Answer any ONE question (1 x 20 = 20)

1. **a)** Write note on the Gaussian distribution (Normal distribution curve).
b) Describe in detail about **i)** Henderson-Hasselbalch **ii)** Volhard's method
2. **a)** Define buffer. What are the applications of buffer solution in pharmacy?
b) Masking and demasking agents in complexometric titrations.

II. Write Short Notes : Answer any FOUR questions (4 x 5 = 20)

1. Define Gasometry. Give the procedure for the assay of oxygen.
2. Theories of indicators in Neutralization titrations.
3. Explain the preparation and standardization of acetous perchloric acid including the precautions to be taken.
4. Write the importance of quality control of drugs.
5. Give note on factors affecting solubility of precipitates.

III. Short Answers: Answer any TWO questions (2 x 2.5 = 5)

1. pH of the solution.
2. Define Acid value and Saponification value.
3. Stoichiometric end point.

PART – II
(PHYSICAL CHEMISTRY)

I. Essay Questions : Answer any ONE question (1 x 20 = 20)

1. a) What is adsorption? Explain the various factors influencing the adsorption.
b) Write note on i) Molar heat capacity ii) Elevation of boiling point.
2. a) What are the colligative properties? Explain the methods of determination for any two.
b) Give a note on Nernst's distribution law.

II. Write Short Notes : Answer any FOUR questions (4 x 5 = 20)

1. Explain about Debye – Huckle theory.
2. Discuss briefly about second law of thermodynamics.
3. Write in detail about the Bomb calorimeter used for the measurement of heat of reaction.
4. What is adsorption isotherm? Explain freundlich adsorption isotherm.
5. Hess law of heat of summation.

III. Short Answers: Answer any TWO questions (2 x 2.5 = 5)

1. Define exothermic and endothermic reactions.
2. Parachor and Rheochor.
3. Raoult's law.

February 2010

[KW 740]

Sub. Code: 4231

**SECOND B.PHARM. DEGREE EXAMINATION
(Regulation 2004)**

Candidates Admitted from 2004-05

Paper II – PHARM ANALYSIS AND PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately

PART – I

(PHARMACEUTICAL ANALYSIS)

I. Essay Questions : Answer any ONE question. (1 x 20 = 20)

1. **a)** Describe the determination of errors and methods to minimize the errors.
b) Explain the various concepts of Acid-base titrations.
2. **a)** Explain the different types of complexometric titrations by using various titratants with suitable examples.
b) Explain in detail about the following:
 - i)** Diazotisation
 - ii)** Kjeldhal's method of nitrogen determination.

II. Write Short Notes : Answer any FOUR questions (4 x 5 = 20)

1. Enumerate various types of indicators used in precipitation titrations.
2. Define co-precipitation and post precipitation. Give notes on various step involved in gravimetric analysis.
3. Write about the preparation and standardization of 0.1 M potassium permanganate with principle and reaction.
4. Scope and limitations of various titrants used in non-aqueous titrations.
5. Give the detail note on calibration of analytical equipments.

III. Short Answers: Answer any TWO questions (2 x 2.5 = 5)

1. Define common ion and common ion effect.
2. Redox potential.
3. Define iodimetry and iodometry.

PART – II
(PHYSICAL CHEMISTRY)

I. Essay Questions : **Answer any ONE question.** **(1 x 20 = 20)**

1. **a)** Define rate of reaction. Clarify with examples and derive the equation for first order reaction.
b) Explain Hess's law of constant heat of summation.
2. **a)** Describe briefly about first law of thermodynamics.
b) Explain about **i)** Partition co-efficient **ii)** Activation energy

II. Write Short Notes : **Answer any FOUR questions** **(4 x 5 = 20)**

1. Describe Carnot's cycle.
2. Give note on Joule-Thomson effect.
3. Determine the molecular mass from elevation of boiling point.
4. Give note on Langmuir's isotherms.
5. Write note on Henry's law for solubility of gas in liquid.

III. Short Answers: **Answer any TWO questions** **(2 x 2.5 = 5)**

1. Degree of freedom.
2. Raoult's law.
3. Define chemisorptions.

[KX 740]

September 2010

Sub. Code: 4231

SECOND B.PHARM. DEGREE EXAMINATION
(Regulation 2004) Candidates Admitted from 2004-05
and 2009-2010 Lateral Entry Batch)

Paper II – PHARM ANALYSIS AND PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately

PART I

(PHARMACEUTICAL ANALYSIS)

I. Essay Questions : Answer any ONE question. (1 X 20 = 20)

1. a) Explain the theory of complexometric titration. What are the different types of complexometric titration.
b) Discuss the importance of buffer in complexometric titration.
2. a) Write a methodology of different steps involved in Gravimetric analysis.
b) Explain co-precipitation and post precipitation.

II. Write Short Notes : Answer any FOUR questions. (4X 5 = 20)

1. Write a note on oxygen flask method.
2. Explain the laws of mass action.
3. Write the mechanism involved in diazotization reaction.
4. Give an account on Neutralization curve.
5. Write notes on Non-aqueous titration.

III. Short Answers: Answer any TWO questions. (2X2.5 = 5)

1. Define Iodimetry
2. Redox potential.
3. Chelating agents.

PART II

(PHYSICAL CHEMISTRY)

I. Essay Questions : Answer any ONE question. (1 X 20 = 20)

1. a) State phase rule. Explain the various terms involved in it and write its application.
b) Explain in detail about Joule – Thomson effect.
2. a) State and explain second law of Thermodynamics.
b) Describe the Carnot cycle in detail.

II. Write Short Notes : Answer any FOUR questions. (4X 5 = 20)

1. Explain Hess's law of constant heat summation and explain some of its application.
2. Write a note on Freundlich adsorption isotherm.
3. Explain the theory of partition coefficient with limitation.
4. Write notes on ideal solution.
5. What is adsorption? Discuss the factors influencing adsorption.

III. Short Answers: Answer any TWO questions. (2X2.5 = 5)

1. Define heat of combustion.
2. Vant-hoff equation.
3. Enthalpy of a reaction.

FEBRUARY 2011

[KY 740]

Sub. Code : 4231

SECOND B.Pharm. DEGREE EXAMINATION.

(Regulation 2004)

(Candidates admitted from 2004-2005 and 2009-2010 Lateral Entry Batch)

Paper II — PHARM ANALYSIS AND PHYSICAL CHEMISTRY

Q.P. Code : 564231

Time : Three hours

Maximum : 90 marks

Answer Part I and Part II Separately.

PART I

(PHARMACEUTICAL ANALYSIS)

I. Essay Questions :

Answer any ONE questions.

(1 x 20 = 20)

1. (a) Write the principles involved in the Law of Mass action and Henderson Hasselbalch equation and give suitable examples.
(b) Explain Buffer solutions and theories of indicators.
2. (a) Discuss about the Diasotization titration reactions and indicators used for this titrations.
(b) Write a methodology of different steps involved in Gravimetric analysis.

II. Write short notes :

Answer any FOUR questions.

(4 x 5 = 20)

1. Write a note on Standardization of perchloric acid.
2. Explain complexometric titrations.
3. Explain the mechanism involved in the oxidation reduction titrations.
4. Give an account on ionic product of water.
5. Write a note on Volhards and Mohrs Methods.

III. Short Answers :

Answer any TWO questions.

(2 x 2.5 = 5)

1. Define the term common ion effect.
2. Chelating agent.
3. PM indicators.

(PTO)

PART II
(PHYSICAL CHEMISTRY)

I. Essay questions :

Answer any ONE questions. (1 x 20 = 20)

1. (a) Define and explain the various types of colligative properties and the methods used for determining the elevation of boiling point.
(b) Define Osmotic pressure. Write the Methods of determinations and its applications.
2. (a) Define the term adsorption and write the uses of adsorption in analysis.
(b) Explain the methods used to measure the adsorption capacity adsorbents and factors influencing adsorption.

II. Write short notes :

Answer any FOUR questions. (4 x 5 = 20)

1. Write briefly about liquid solutions.
2. Explain the uses of gas solid solutions.
3. Discuss about Phase rule.
4. Define and explain Hess Law of constant Heat of summation.
5. Briefly describe the second law of Thermodynamics.

III. Short Answers :

Answer any TWO questions. (2 x 2.5 = 5)

1. Partition coefficient.
2. Ideal solution.
3. Joule Thomson Effect.
