

[KD 734]

Sub. Code : 4225

FOURTH B.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

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 the same Answer Book.

Answer Section C in the answer sheet provided.

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

Answer any TWO questions.

Each question carries 15 marks.

1. (a) With a neat diagram, describe the components of a double beam U.V. Spectrometer, with special emphasis on monochromators and detectors. (12)

- (b) Compare a Nephelometer with Turbidimeter. (3)

2. (a) Describe the factors affecting Intensity of fluorescence. (5)

- (b) Write the significance of Reverse phase chromatography. (3)

- (c) Give the construction and functioning of a Dropping Mercury Electrode. Add a note on the advantages of DME. (7)

3. (a) Discuss the principles of chromatography. (5)

- (b) How are end points determined in potentiometry? (5)

- (c) Write short notes on Mass Spectroscopy. (5)

4. (a) Give the construction, working and applications of Glass electrode. (8)

- (b) What is chemical shift? Which compounds give NMR spectra? (4)

- (c) What is frequency and wavelength? How are they expressed? (3)

SECTION B — ($6 \times 5 = 30$ marks)

Answer any SIX questions.

Each question carries 5 marks.

5. (a) What is Isosbestic point and Hypsochromic shift? (2)

- (b) When do you see deviations from Beer's law? (3)

6. (a) What is Quenching? Describe the various quenching types. (3)

(b) Explain the method of fluorimetric determination of vitamin B₁. (2)

7. With equations, write the principle involved in the standardisation of the following titrants :

(a) Lithium methoxide in non-aqueous titrations. (3)

(b) Ceric ammonium sulphate in oxidation-reduction titrations. (2)

8. Give the construction and functioning of a Calomel Electrode. (5)

9. Derive an expression for Half wave potential. Describe its significance in polarographic analysis. (5)

10. (a) What is cell constant? How is it measured? (3)

(b) Explain the principles of conductometric titration of a mixture of strong acid and weak acid with strong base. (2)

11. (a) Define Auxochrome with examples. (2)

(b) Write a note on spectrophotometric titrations. (3)

12. (a) List out the stationary phases used in Gas Liquid chromatography and Gas solid chromatography. (4)

(b) Define Retention volume. (1)

13. Classify ion exchangers used in the Ion exchange chromatographic process with example and give the factors affecting the reversible ion exchange process. (5)

NOVEMBER - 2001

[KE 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

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 the same Answer Book.

Answer Section C in the Answer Sheet provided.

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

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Give the principle involved in potentiometric titrations? Add a note on the advantages of potentiometric titrations. (5)
- (b) Give the construction and working of glass electrode. (6)
- (c) Add a note on the applications of paper chromatography. (4)

NOVEMBER - 2001

2. (a) State Beer-lambert law. Deduce a mathematical expression for the same. Bring out the interrelationship of absorbance and transmittance. (7)

(b) Explain the basic principle and instrumentation of gas chromatography using a schematic sketch of the instrument. (8)

3. (a) Explain the principle, essential components and working of polarography. (8)

(b) Discuss the phenomenon of fluorescence and describe an instrument working on this principle. (7)

4. (a) Discuss the principle involved in diazotisation titrations giving necessary equations. (5)

(b) Discuss the applications of UV spectroscopy. (5)

(c) Describe the procedure of estimating quinine sulphate (or) reserpine by fluorimetry. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

5. Describe an expression for half wave potential. Describe its significance in polarographic analysis. (5)

6. (a) Define retention time and retention volume. (3)

(b) Compare column chromatography with HPLC. (2)

7. Discuss the various types of indicators used in redox titrations. (5)

8. Give a note on the applications of column chromatography. (5)

9. (a) Give the principle involved in IR spectroscopy. (3)

(b) What is quenching? List out the various types of quenching. (2)

10. Give the construction and functioning of saturated calomel electrode. (5)

11. Explain the principles of conductometric titration of a mixture of strong acid Vs strong base and weak acid Vs weak base. (5)

12. (a) Give a note on isosbestic point. (3)

(b) Define chromophore with examples. (2)

13. What is chemical shift? Which compounds give NMR spectra? (5)

[KG 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

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 the same answer book.

Answer Section C in the answer sheet provided.

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

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Give the principle of polarography. (3)
(b) Give the construction and working of Dropping Mercury Electrode. Add a note on the advantages and disadvantages of DME. (7)
(c) Write short notes on NMR spectroscopy. (5)

2. (a) Explain the two laws governing absorption of radiation. (6)

(b) Discuss in detail the various components of a double beam UV spectrometer with the help of a neat diagram. (9)

3. (a) Discuss the principles involved in chromatography. (4)

(b) Discuss briefly the various detectors used in Gas Chromatography. (8)

(c) Discuss the different techniques for the preparation of TLC plates. (3)

4. (a) Give the principle involved in non-aqueous titrations. (3)

(b) How do you prepare and standardise 0.1 N perchloric acid? (7)

(c) Write short notes on the indicators used in complexometry. (5)

SECTION B — ($6 \times 5 = 30$ marks)

Answer any SIX questions.

Each question carries 5 marks.

5. (a) Give the principle involved in potentiometry. (2)
(b) Write short notes on Glass electrode. (3)

MARCH - 2002

6. (a) Give the significance of reverse phase chromatography. (3)

(b) Masking and demasking agents used in complexometry. (2)

7. Discuss briefly the dead stop end point technique. (5)

8. (a) Compare the Nephelometer with Turbidometer. (3)

(b) What is self-quenching? Give example. (2)

9. Give the principle and equations involved in the standardisation of the following titrants :

(a) Sodium methoxide in non-aqueous titration. (2½)

(b) Disodium edetate in complexometry. (2½)

10. (a) What are auxochromes? Give examples. (2)

(b) Explain the method of determination of vitamin B₁ by fluorimetry. (3)

11. (a) What is frequency and wavelength? (2)

(b) Define cell constant? How is it measured? (3)

12. (a) Discuss the factors affecting ion exchange separations. (3)

(b) What are the advantages of column chromatography? (2)

13. (a) Explain the principle involved in Mass spectroscopy. (2)

(b) Give a note on applications of peaks in MS. (3)

[KH 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF PHARM.
ANALYSIS

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 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 is diffusion current and discuss the factors affecting diffusion current. (10)
(b) Explain polarographic maxima and how it can be prevented. (3)
(c) Mention the importance of half wave potential. (2)

2. (a) Explain the differences between cation exchangers and anion exchangers. Give examples. (3)

- (b) Bring out the essential differences between Turbidimetry and Nephelometry. (6)

- (c) Mention the detectors used in u.v. spectrophotometers and explain the construction and working of any one of them. (6)

3. (a) Explain Beer-Lambert's law, its applications and deviations. (10)

- (b) Define chemical shift and mention its applications. (5)

4. (a) Discuss the working and construction of thermal conductivity detector. (5)

- (b) Explain the phenomenon of "Quenching of fluorescence". (5)

- (c) Explain what are masking agents and its uses in complexometric titrations with examples. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. (a) Define Precision and errors. (2)
(b) List out the sources of errors and how they can be avoided. (3)

SEPTEMBER - 2002

6. Write notes on :

(a) Effect of pH and structural rigidity on fluorescence. (2½)

(b) Redox titration by potentiometry. (2½)

7. (a) How will you find out the optimum linear gas velocity in gas chromatography? (2)

(b) Define the terms :

Bathochromic shift, Hypsochromic shift and Coupling constant. (3)

8. (a) Explain cell constant of conductivity cell. (2)

(b) What are the different methods of detection of compounds in TLC in a molecule. (3)

9. (a) What changes are seen in a molecule when it absorbs IR radiation? Explain. (3)

(b) Explain the functions of Salt bridges in electrolytic cells. (2)

10. (a) Describe the principle of NAT of Ephedrine HCl. (3)

(b) Give the principle involved in mass spectrometry.

11. How will you prepare and standardise 0.1 N sodium methoxide for NAT.

12. Write a note on construction and working of Calomel electrode.

13. Explain the use of the following as titrants, including the advantages and disadvantages.

(a) Ceric ammonium sulphate. (2½)

(b) Sodium Nitrite. (2½)

APRIL - 2003

[KI 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

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 the SAME Answer Book.

Answer Section C in the Answer Sheet provided.

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

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Give the theory involved in Fluorimetry. (4)
(b) What are the factors affecting the fluorescence? (6)
(c) Give the pharmaceutical applications of fluorimetry with examples. (5)

2. (a) Discuss briefly the different electrodes used in potentiometric titrations with respect to their construction. (9)

(b) Which are the different techniques of determining the end point in potentiometry? Explain. (6)

3. (a) What is the principle involved in IR spectroscopy? (4)

(b) How are the compounds estimated by non-aqueous titrations method with atleast two examples. (6)

(c) List out the applications of titanous chloride. (5)

4. (a) How do you prepare and standardise 0.1 N potassium permanganate? (5)

(b) What is the principle involved in complexometry? (4)

(c) Discuss briefly the detectors used in gas chromatography. (6)

SECTION B — ($6 \times 5 = 30$ marks)

Answer any SIX questions.

Each question carries 5 marks.

5. (a) Give the principle involved in conductometric titrations. (3)
(b) What is the principle involved in chromatography techniques? (2)

APRIL - 2003

6. (a) List out the applications of Nepheloturbidimetry. (3)

(b) What is quenching? Which are the different types of quenching? (2)

7. (a) What is the principle involved in NMR spectroscopy? (3)

(b) What is λ_{max} and isobestic point? (2)

8. (a) Write a note on applications of peaks in MS. (3)

(b) List out the applications of HPLC. (2)

9. (a) What R_f , R_z and R_t ? (3)

(b) What are the applications of column chromatography? (2)

10. (a) What is DME? Where is it used? (2)

(b) What is the principle involved in ESR spectroscopy? (3)

11. (a) What is the principle involved in diazotization titrations? (3)

(b) List out the applications of amperometric titrations. (2)

12. (a) Discuss the different techniques for the preparation of TLC plates. (3)

(b) What are chromophores? Give examples. (2)

13. State and derive Beer-Lambert Law. (5)

OCTOBER - 2003

[KJ 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

Time : Three hours

Maximum : 90 marks

Two hours and

Sec. A and Sec. B : 70 marks

forty minutes

for Sec. A and Sec. B

Twenty minutes for Sec. C

Section C : 20 marks

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 of the following.

1. (a) Explain the principle involved in gas liquid chromatography.

(b) Discuss in detail the various components of GC with the help of a neat diagram. Add a note on the applications of gas chromatography.

2. (a) Give the principle and advantages of potentiometric titrations.

(b) Discuss briefly the construction of glass electrode.

(c) Give a brief note on the applications of potentiometric titrations.

3. (a) Derive an equation for Beer-Lambert's law.

(b) Discuss in detail the instrumentation of double beam spectrophotometer with the help of a neat diagram.

SECTION B — ($8 \times 5 = 40$ marks)

Answer any EIGHT of the following.

4. (a) What is PM indicator? Give examples.

(b) What is Werner's co-ordination number? Give its significance.

5. Discuss the principle involved in non aqueous titrations.

6. Discuss briefly the dead stop end point technique.

7. (a) Give the principle involved in ion exchange chromatography.

(b) Add a note on the applications of ion exchange chromatography.

OCTOBER - 2003

8. Discuss the procedure and methods in preparing columns in column chromatography.
 9. Briefly explain the instrumentation of nephelometer.
 10. (a) Explain the principle involved in mass spectroscopy.
(b) Give a note on the applications of peaks in MS.
 11. Explain the different types of fluorescence.
 12. How do you prepare and standardise sodium nitrite solution?
 13. Give a brief note on dropping mercury electrode.
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APRIL - 2004

[KK 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

Time : Three hours

Maximum : 90 marks

Sec. A & B : Two hours and
forty minutes

Sec. A & B : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and Section B in the SAME
Answer Book.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Give an account on the principle and various techniques of paper chromatography. (9)
(b) Write notes on the following : (6)
 - (i) Gradient elution in HPLC.
 - (ii) Temperature programmic in GLC.
2. (a) Explain different types of conductometry titration curves. (10)
(b) Write notes on construction, working and maintenance of glass electrode. (5)

3. (a) Define Beers law and Lamberts law. Derive mathematical expression for combined Beer-Lamberts law. (9)

(b) Explain the reasons for deviation from Beer's law. (3)

(c) Fluorimetry is more sensitive and selective than UV-spectrophotometer. Justify the statement. (3)

4. (a) Explain the construction and working of polarograph with special reference to dropping mercury electrode. (8)

(b) Write notes on detectors used in IR spectrophotometer. (7)

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

5. Explain the terms "accuracy" and "precision". How are they quantified? (5)
6. What do you mean by quenching of fluorescence? What are the types? (5)
7. What are reference electrodes? Explain the construction and working of calomel electrode. (5)
8. Explain various methods used to detect spot in thin layer chromatography. (5)

APRIL - 2004

9. Explain briefly the principle of magnetic deflection mass spectrophotometer. (5)
10. Write briefly on the principle of ion exchange chromatography and its applications. (5)
11. What is the principle and applications of dead stop end point technique? (5)
12. Give an account on masking and demasking agents and their use in complexometry. (5)
13. (a) What is cell constant? How is it determined?
(b) What is auxochrome? Give examples. (5)
14. Explain the terms : (5)
- (a) Specific Conductance
 - (b) Molecular Conductance
 - (c) Electrical Conductance.
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AUGUST - 2004

[KL 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

Time : Three hours

Maximum : 90 marks

**Sec. A & B : Two hours and
forty minutes**

Sec. A & B : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

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

SECTION A — (2 × 15 = 30 marks)

Answer any TWO of the following.

1. (a) Explain the features of Energy level diagrams for photoluminescent molecules.

(b) Explain the factors affecting the fluorescence intensity. (10 + 5)

2. (a) Explain the working of a Dropping Mercury Electrode.

(b) Explain the different polarographic current. (5 + 10)

3. (a) Explain different types of conductometric titration.

(b) Give the applications in pharmaceutical analysis with examples.

(c) Give the principle and advantages of potentiometric titrations. (7 + 4 + 4)

4. (a) Discuss the principles involved in chromatography. (4)

(b) Discuss briefly the various detectors used in Gas Chromatography. (8)

(c) Discuss the different techniques for the preparation of TLC plates. (3)

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT of the following.

5. What are the methods of detection in TLC.

6. Explain the principle and application of counter current extraction.

7. Derive an equation for Beer Lambert's Law.

8. Explain the working of different Light sources used in uv/visible spectrophotometer.

9. Explain the sampling techniques in Infra Red Spectroscopy.

AUGUST - 2004

10. Give a brief note on Masking agents used in complexometric titrations with examples.
 11. Explain the working of any two detectors used in gas chromatography.
 12. Explain the advantages of Double beam spectrophotometer over single beam uv spectrophotometer.
 13. Write a brief note on ion-exchange chromatography.
 14. Explain the application of HPLC in pharmaceutical analysis.
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FEBRUARY - 2005

[KM 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

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

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Discuss the principles of chromatography. (5)
(b) Explain the instrumentation of gas chromatography with the help of schematic diagram. (7)
(c) What is chemical shift? Which types of compounds give NMR spectra? (3)

2. (a) State Beer-Lambert law. Derive the mathematical expression. (7)

(b) Write short notes on mass spectroscopy. (5)

(c) Give the significance of reverse phase chromatography. (3)

3. (a) Give the principle involved in non aqueous titrations. Explain the preparation and standardisation of 0.1 N perchloric acid. (10)

(b) Discuss the applications of UV spectroscopy. (5)

4. (a) Explain the construction, working and applications of glass electrode. (8)

(b) Discuss the phenomenon of fluorescence and describe an instrument working on this principle. (7)

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

Each question carries 5 marks.

5. List out the applications of paper chromatography. (5)
6. Deduce an expression for half-wave potential. Explain its significance in polarographic analysis. (5)
7. (a) Compare Nephelometer with Turbidometer. (3)
(b) When do you see deviations from Beer's law. (2)

FEBRUARY - 2005

8. Write short notes on IR spectroscopy. (5)
9. Give the principle and equations involved in standardisation of
- (a) Ceric ammonium sulphate in Redox titrations. (3)
 - (b) Sodium nitrite in diazotisation. (2)
10. Explain the procedure involved in estimating quinine sulphate. (5)
11. Classify ion exchangers used in the ion exchange chromatographic process with example and give the factors affecting the reversible in exchange process. (5)
12. Compare HPLC with column chromatography. (5)
13. Write a note on dead stop end point technique. (5)
14. Give the principle involved in conductometric titrations. (5)
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AUGUST - 2005

[KN 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

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

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Give the principle, involved in polarography. (3)

(b) Explain the construction and working of dropping mercury electrode. Add a note on advantages and disadvantages of DME. (12)

2. (a) With the help of a neat labelled diagram, explain the construction of double beam UV spectrometer. (10)

(b) Discuss the principle involved in diazotisation titrations giving the necessary equations. (5)

3. (a) Discuss in detail the principle and instrumentation of HPLC with the help of a schematic sketch. (10)

(b) Write short notes on NMR spectroscopy. (5)

4. (a) Give the construction, working and applications of glass electrode. (10)

(b) Explain the principles of conductometric titrations of a mixture of strong acid Vs weak base and weak acid Vs strong base. (5)

II. Short notes :

(8 × 5 = 40)

Answer any EIGHT questions.

Each question carries 5 marks.

1. Explain the two laws governing absorption of radiation. (5)

2. (a) Explain the significance of reverse phase chromatography. (3)

(b) Masking and demasking agents used in complexometry. (2)

3. Describe the factors affecting intensity of fluorescence. (5)

4. Give the principle and equations involved in the standardisation of perchloric acid. (5)

AUGUST - 2005

5. (a) What are auxochromes? Give examples. (2)
(b) Define cell constant. How is it measured? (3)
 6. (a) Explain the different techniques for preparation of TLC plates. (3)
(b) What is self quenching? Give an example. (2)
 7. Explain the procedure for fluoremetric determination of vitamin B₁. (5)
 8. (a) Give the principle involved in IR spectroscopy. (3)
(b) Give a note on isosbestic point. (2)
 9. List out the applications of column chromatography. (5)
 10. What is nephloturbidity meter? Write its applications. (5)
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FEBRUARY - 2006

[KO 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

Time : Three hours Maximum : 90 marks

**Theory : Two hours and Theory : 70 marks
forty minutes**

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

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Explain the phenomenon of fluorescence and its applications in pharmaceutical analysis. (7)

(b) With the help of a neat diagram, explain the construction and working principle of double beam spectrophotometer. (8)

2. (a) Describe in detail any two detectors employed in GLC. (9)

(b) Explain the significance of reverse phase chromatography, HETP and retention time. (6)

3. (a) Explain Lambert-Beer law. Give its deviations. (7)

(b) Describe with a neat diagram, the working principle of double beam UV-VIS spectrophotometer. (8)

4. (a) Write short notes on chemical shift and spin-spin splitting. (8)

(b) Discuss the principle and instrumentation of IR spectroscopy (spectroscopy). (7)

II. Short notes on any EIGHT questions.

(8 × 5 = 40)

1. Give the main difference between

(a) Paper chromatography TLC (3)

(b) GLC and HPLC (2)

2. Give construction, advantage and disadvantages of DME. (5)

3. Discuss the principle, stationary phase and mobile phase employed in ion exchange chromatography. (5)

4. List out the differences between nephelometer and Turbidimeter. (5)

FEBRUARY - 2006

5. Explain the principle and applications of conductometric titrations. (5)
 6. Write the principle involved in mass spectroscopy. What is the significance of molecular ion? (5)
 7. Write short notes on glass electrode. (5)
 8. Explain the principle of amperometric titration of a mixture of electro active species and a non electro active species. (5)
 9. Discuss the principle involved in oxidation-reduction titrations giving necessary equations. (5)
 10. What is PM indicator? Discuss briefly about masking and demasking agents. (5)
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AUGUST - 2006

[KP 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

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

I. Long Essays :

Answer any TWO questions : (2 × 20 = 40)

1. (a) Define and explain Beer-Lamberts law and write its applications and limitations.

(b) Write about the detectors used in UV-spectrometers.

2. With a neat diagram explain the instrumentation and working of gas chromatograph.

3. (a) With a neat diagram explain the construction, merits and demerits of dropping mercury electrode.

(b) Write a note on :

(i) Half wave potential

(ii) Polarographic maxima.

4. (a) Give principles involved in non-aqueous titrations.

(b) How do you prepare and standardise 0.1 N perchloric acid?

(c) Write short notes on the indicators used in complexometry.

II. Short notes on any SIX : (6 × 5 = 30)

1. Explain different sampling technique employed in infrared spectroscopy.

2. (a) Give principles involved in potentiometry. (2)

(b) Write short notes on electrode. (3)

3. Write a brief note on :

(a) Retention time

(b) HETP.

4. Explain conductometric titration with examples.

AUGUST - 2006

5. Write about various methods employed in the identification of spots in Thin layer chromatography.
 6. With a neat diagram explain the construction of glass electrode and write its merits and demerits.
 7. Explain the principle and applications of Ion Exchange chromatography.
 8. Define chemical shift and mention its significance.
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FEBRUARY - 2007

[KQ 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V – MODERN METHODS OF PHARMACEUTICAL ANALYSIS

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

I. Long Essay :

(2 x 20 = 40)

Answer any TWO questions :

1. (a) Explain, with the help of a neat labelled diagram, the construction of a double beam U.V. Spectrophotometer.

(b) List out the applications of Polarography in pharmaceutical analysis.

2. (a) Discuss in detail the principle and instrumentation of Gas Chromatography with the help of a schematic diagram.

(b) Write notes on I.R. Spectroscopy.

3. (a) Explain the principle and instrument used in fluorescence analysis.

(b) What is cell constant? How is it measured?

4. (a) Write the construction, working and applications of Turbidity meters and Nephelometers.

(b) Give the significance of reverse phase chromatography.

II. Short notes :

(6 × 5 = 30)

Answer any SIX questions.

Each question carries 5 marks.

1. List out the applications of column chromatography. (5)

2. How is the basicity of organic acids determined by conductance measurement? (5)

3. (a) What are auxochrome? Give example. (2)

(b) Masking and demasking agents used in complexometry. (3)

4. What are the advantages of potentiometric titration over direct potentiometry? (5)

5. Discuss the types of applications in which gas chromatography is particularly useful. (5)

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6. Describe the factors affecting intensity of fluorescence.
 7. Compare fluorimetry and phesphorimetry with absorption methods.
 8. List out the applications of NMR spectroscopy.
-

August-2007

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II. Short notes :

(8 × 5 = 40)

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

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

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

1. Define Beer's law and Lambert's law. Derive mathematical expression for combined Beer-Lambert law. Add a note on deviations from Beers-law.
2. Explain the conductometric titration curves for different types of titrations.
3. Define reference electrode and indicator electrode. Give examples. Explain the construction and working of standard hydrogen electrode and glass electrode including half cell reaction.
4. What do you mean by chromatography? How are they classified? Give an account of the instrumentation of gas chromatography including stationary phase, mobile phase, columns and detectors.

Answer any EIGHT questions.

1. Explain the construction and working of photomultiplier tube.
2. Explain various sample preparation techniques of I.R. spectrophotometry.
3. What are the methods used to determine end point in diazotisation titration? Explain them.
4. Give an account on masking and demasking agents used in complexometric titration.
5. Write notes on the principles of NMR.
6. Explain the structural features of molecules affecting fluorescence.
7. Discuss the principle of flame photometry and its uses.
8. Explain amperometric titrations of curves.
9. Explain chromophore and ligands with examples.
10. Classify ion exchangers used in chromatography.

February-2008

[KS 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

Q.P. Code : 564225

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

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Explain the laws governing absorption of radiation.

(b) Give the construction of an electro chemical cell.

(c) Determination of end points in potentiometric titrations.

2. (a) Explain the principle involved in Nephelometry and Turbidometry.

(b) Add a note on quenching of fluorescence.

(c) Explain briefly the applications of NMR spectroscopy.

3. (a) Explain in detail the construction and working of calomel electrode.

(b) List out the applications of Ampermetric titrations.

4. (a) Discuss the instrumentation of HPLC.

(b) Explain the principle and working of Katharometer.

II. Short notes :

(8 × 5 = 40)

Answer any EIGHT questions.

Each question carries 5 marks.

(a) Discuss in brief Redox indicators.

(b) List the applications of mass spectroscopy.

(c) Explain briefly the construction of Nephelometer.

(d) Explain the principle of polarography.

(e) Add a brief note on photomultiplier tube.

(f) Explain the construction of DME.

(g) Discuss the factors affecting column efficiency.

(h) How do you prepare and standardise perchloric acid?

(i) What are the advantages of TLC?

(j) Explain the principle of diazotisation titrations.

August 2008

[KT 734]

Sub. Code : 4225

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS

Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Long Essay : (2 × 20 = 40)

Answer any TWO questions.

1. Discuss in detail about the principle involved in UV spectroscopy and explain the instrumentation of UV spectrophotometer with its schematic diagram.
(6 + 7 + 7 = 20)

2. (a) Explain the theory of partition in paper chromatography with its various techniques employed.
(5 + 5 = 10)

(b) Give an account on quantitative and qualitative detection in paper chromatography.
(3½ + 3½ = 7)

(c) Discuss the various papers used in paper chromatography. (3)

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3. (a) Explain in detail about the principle and instrumentation of fluorimetry. (7 + 8 = 15)

(b) Discuss the applications of fluorescence analysis in Pharmacy. (5)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. Derive Beer's law and discuss the reason for its deviations.

2. Give an account on any two detectors used in Gas chromatography.

3. Explain the method of preparation of plates in thin layer chromatography. (5)

4. Write short notes on principles of NMR. (5)

5. Classify ion exchangers used in Chromatography. (5)

6. Discuss in brief Redon indicators. (5)

7. Explain the construction of DME. (5)

8. Establish a mathematical relationship between concentration of fluorogenic substance and intensity of fluorescence. Give any two examples of a fluorogenic substances. (5)

9. Give the principle involved in potentiometry and write short notes on electrode. (5)

10. Explain conductometric titrations with examples. (5)

III. Short answers : (5 × 2 = 10)

Answer any FIVE questions.

1. Define polarographic analysis with suitable examples. (2)

2. Define chemical shift.

3. Briefly answer about finger print region.

4. Define the term phosphorescence.

5. Define NAT.

6. What do you mean by the term Chromatography?

7. Give two applications of paper chromatography in Pharmacy.

August 2008

[KT 755]

Sub. Code : 4246

FOURTH B.Pharm. DEGREE EXAMINATION.

(Regulations 2004)

**Paper V — MODERN METHODS OF
PHARMACEUTICAL ANALYSIS**

Q. P. Code : 564246

Time : Three hours

Maximum : 90 marks

I. Long Essay :

(2 × 20 = 40)

Answer any TWO questions.

1. (a) Discuss the construction and working of DME, with neat diagram.

(b) What is half-wave potential? Explain its important role?

(c) Explain about polarographic maxima and associate factors. (8 + 7 + 5)

2. (a) Explain the phenomenon of fluorescence and its application.

(b) What is self quenching? Give an example with suitable explanation.

(c) Draw the neat diagram, explain the construction and working principle of double beam spectrofluorimeter. (8 + 5 + 7)

August 2008

3. (a) Explain Lamber's Beer Law. Give its importance and its associated deviation.

(b) Give a note on isosbestic point.

(c) Write the chemistry involved in the estimation of sulfa drug by colorimeter.

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

(1) Discuss the principle, stationery phase and mobile phase employed in ions exchange chromatography.

(2) Write short notes on glass electrode.

(3) Discuss the suitable method of estimation for quinine sulphate?

(4) Write short notes on NMR spectroscopy.

(5) Give the principle involved in IR spectroscopy.

(6) Explain low molecular spectra different from electronic spectra.

(7) Explain the dead stop and point technique.

(8) Detectors in gas chromatography.

(9) Give the significance and theory of reverse phase chromatography.

(10) Give the principle involved in potentiometry.

III. Short answer : (5 × 2 = 10)

Answer any FIVE questions.

(1) Why is TMS used a standard reference in NMR spectroscopy?

(2) What are metastable peaks?

(3) What is turbidimetry? How is it related to colorimetry?

(4) What is chemiluminescence's?

(5) What is nujol? Discuss its use in infrared spectroscopy as a mulling agent.

(6) Describe the term bathochromic and hypsochromic with example of each.

(7) What is R_f value? How it is determined?

February 2009

[KU 734]

Sub. Code: 4225

FOURTH B.PHARM. DEGREE EXAMINATION
(ReRevised Regulations)
Candidates Admittted upto 2003-04
Paper V – MODERN METHODS OF PHARMACEUTICAL
ANALYSIS
Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20 = 40)

1. **a)** Derive an expression for beer-lambert's law as applied to solutions and write the general principle, construction, working and applications of a double beam UV visible spectrophotometer.
b) Explain in detail about photoluminescence? What are the relationship between the concentration and Fluorescence, and mention the structural features required to give fluorescence with the help of a neat label diagram.
2. **a)** Explain in detail the construction of Infra- red spectrophotometer.
b) Discuss ion exchange chromatography and how it differs from column chromatography, classify ion-exchange resins and give their structures and characteristics.
3. **a)** Compare the principles involved, common features and differences in the techniques of nephelometry and turbidometry and discuss their applications in pharmacy.
b) Explain in detail the construction and working of colomel electrode.
c) Discuss the factors affecting column efficiency.

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. What are the different methods available to induce ionization of a sample in mass spectroscopy?
2. Distinguish between cis- trans isomers and keto-enol tautomers using UV – Spectroscopy?
3. Discuss the different types of radiation sources used in UV visible and IR spectrometric methods and mention the different types of detectors used in IR spectrometer.
4. Name types of electrode used in titrations methods and explain any one.
5. Enumerate the applications of ion-exchange chromatography.

6. Explain the NMR phenomenon? In detail.
7. Describe the construction and working of a double beam spectrofluorometer.
8. How to prepare TLC plates? The common absorbents used in TLC and the cultivation of the TLC plates.
9. Explain various types of sample preparation techniques of I.R. spectrophotometry.
10. Explain amperometric titrations of curves with example.

III. Short Answers: Answer any FIVE questions (5 x 2 = 10)

1. Photoelectric colorimeter.
2. Reference electrodes.
3. Bathochromic shift.
4. Retention time.
5. Woodward's rules in UV-spectroscopy.
6. Explain the terms chemical shift and shielding.
7. Two – Dimensional chromatography.

FOURTH B.PHARM. DEGREE EXAMINATION
(ReRevised Regulations) Candidates Admitted upto 2003-04
Paper V – MODERN METHODS OF PHARMACEUTICAL
ANALYSIS

Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20 = 40)

1. a) Write a note of reverse dead stop end point technique.
b) Explain the principle involved in polarography. Explain the half wave potential and applications of polarography.
c) Write a note on indicator electrodes.
2. a) With a neat labeled diagram explain the working of UV-visible spectrophotometer.
b) Factors influencing chemical shift.
c) Write a note on cation exchangers.
- 3 a) Write a note on theory of light scattering and applications of turbidimetric analysis.
b) How will you assay ephedrine HCl.
c) With a neat diagram explain the principle and instrumentation of HPLC.

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. Importance of buffers in complexometric titrations.
2. How will prepare and standardize ceric ammonium sulphate and titanous chloride?
3. What is chelate? Give analytical applications of widely used chelating agents.
4. Give the principle involved in counter current extraction.
5. Citing examples, write a note on conductometric titrations.
6. Write briefly with examples the methods used for detection of components eluted in column chromatography.
7. Factors influencing intensity of fluorescence.
8. Write a note on significant figures.
9. Derive Lambert's law.
10. Applications of infra red spectra.

III. Short Answers: Answer any FIVE questions(5 x 2 = 10)

1. Define electrochemical cell.
2. Why quartz cuvettes are used for holding samples in UV spectrophotometry?
3. What is a Nernst equation?
4. Define half wave potential.
5. What is λ scale?
6. Wavelength of IR region.
7. What are polarographic suppressors?

February 2010

[KW 734]

Sub. Code: 4225

FOURTH B.PHARM. DEGREE EXAMINATION
(ReRevised Regulations)
Candidates Admitted upto 2003-04
Paper V – MODERN METHODS OF PHARMACEUTICAL
ANALYSIS
Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20 = 40)

1. a) Explain the principle involved in fluorimetric analysis. Explain the instrumentation of a spectrofluorimeter. (12)
b) Explain the theory of electronic spectroscopy. (4)
c) What is the principle involved in NMR spectroscopy? (4)
2. a) Write a note of reverse dead stop end point technique. (5)
b) Explain the preparation and standardization of 0.1 M perchloric acid including the precautions to be taken. (5)
c) Write a note on pM indicators. (5)
d) Discuss the use of diazotization methods in the analysis of drugs with an example. (5)
3. a) Explain the theories of chromatography and the different development techniques employed in paper chromatography. (8)
b) Describe the steps involved in the procedure for obtaining a thin layer chromatogram. (5)
c) Name the different types of detectors used in GC and the working of any two of them. (7)

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. What are different regions of the IR spectrum? Explain various types of stretching and bending vibrations.
2. Write a note of principle and applications of nepheloturbimetry in pharmacy.
3. Explain the use of masking and demasking agents in the estimation of mixture of metal ions by complexometry.
4. Quantitative applications of UV – Visible spectrophotometry.
5. The principle and applications of gel filtration.
6. Applications of potentiometry.
7. Write a note on DME.
8. What are deviations of Beer's law?
9. Sources of errors in pharmaceutical analysis.
10. Draw and explain the various features of polarographic curve.

III. Short Answers: Answer any FIVE questions (5 x 2 = 10)

1. What do you mean by leveling effect?
2. What is Ilvokic equation?
3. Define the term quenching.
4. What do you mean by isometric point?
5. Draw the conductometric titration curve for a strong base Vs a mixture of strong and weak acid.
6. Define Hookes law.
7. Define retardation factor.

FOURTH B.PHARM. DEGREE EXAMINATION
(Re-Revised Regulations) Candidates Admitted upto 2003-04
Paper V – MODERN METHODS OF PHARMACEUTICAL
ANALYSIS
Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions.

(2 X 20 = 40)

1. a) Write the principle, preparation, procedure and method of detection in Column chromatography.
b) With a neat diagram explain the working principle of dispersive IR.
2. a) With a neat labeled diagram explain the working of Spectrofluorimeter.
b) Explain in detail about chemical shift and spin-spin coupling.
3. a) Explain the different types of solvents used in non aqueous titrations with examples.
b) Write short notes on ilkovic equation and the different currents observed in polarography.

II. Write Short Notes : Answer any EIGHT questions.

(8X 5 = 40)

1. What are the detectors used in GLC? Discuss the principle of Electron Capture Detector.
2. Write short notes on quenching.
3. Explain the different methods of detecting the end point by diazotization titration.
4. Discuss the different factors affecting the fluorescent intensity.
5. Write the advantages of TLC over paper chromatography.
6. Explain the conductometric titrations with examples.
7. Define the terms: R_f value, HETP, Retention time, Finger print region and resolution.
8. Write the applications of nephelo-turbidimetric analysis.
9. Write a note on errors and methods of minimizing errors.
10. Explain the different detectors used in UV spectroscopy.

III. Short Answers: Answer any FIVE questions.

(5X2 = 10)

1. Define indicator electrode.
2. What is polarographic maxima?
3. What is sequestering agent?
4. Mention a basic titrant and indicator used in titration of weakly acidic substance in NAT.
5. Define base peak and isotopic peak.
6. Mention the light sources used in IR spectroscopy.
7. What do you mean by reverse phase chromatography?

FEBRUARY 2011

[KY 734]

Sub. Code: 4225

FOURTH B.PHARM. DEGREE EXAMINATION

(Re-Revised Regulations) Candidates Admitted upto 2003-04

Paper V – MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Q.P. Code : 564225

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions. (2 x 20 = 40)

1. a) Explain the current voltage curve and various currents in polarographic measurements.
b) What is fluorescence quenching? Explain with examples.
2. a) With neat diagram explain working principles of Nepheloturbidimeter.
b) Explain various types of potentiometric titrations.
3. a) Give the principle, exchange mechanism and application of Ion exchange chromatography.
b) Draw and explain Dropping Mercuric Electrode (DME).

II. Write Short Notes : Answer any EIGHT questions. (8 x 5 = 40)

1. Add a note on quantitative application of UV spectroscopy.
2. What's NMR spectroscopy? Brief on its principle and application.
3. Explain the end point detection methods of complexometry.
4. Define: Isobestic point, chromophore, finger print lesion, retention time, HETP.
5. Discuss the principle and working of Ketharometer.
6. Write shortly on HPLC.
7. Explain baseline technique in IR.
8. Give differences between TLC and paper chromatography.
9. What is principle and procedure of ultra centrifuge?
10. What are the application of amperometric titration?

III. Short Answers: Answer any FIVE questions. (5 x 2 = 10)

1. What is Hooke's law?
2. What is TMS in NMR?
3. Define dead stop end point.
4. What is reverse phase chromatography?
5. Define Fluorophore.
6. What is a molecular ion peak?
7. What is mean by significant figure?
