APRIL - 1993

[RS 562]

FOURTH B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper V — MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Explain the principle, stationary phase and mobile phase used for paper chromatography.

(b) Explain the various techniques of paper chromatography.

(c) Give an account of stationary phase and mobile phase used in gas chromatography.

2. (a) What do you mean by HETP? What is its significance?

(b) What is a monochromator? Explain various filters and monochromators used in spectrophotometer with their working princaple.

(c) Explain, how U-V-visible spectrophotometry can be used for quantitative analysis, based on Beer-Lambert's law.

3. (a) Explain the construction and working of Fluorimeter.

(b) Explain the factors affecting fluorescence intensity

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

(b) What is polarographic maxima? How it can be suppressed?

(c) What is diffusion current? Explain the use of diffusion current in quantitative analysis.

5. Give an account of the principle and the types of titration curves in Amperometric titration. Explain the applications of Amperometric titration.

6. (a) Write the principle involved in non-aqueous titrations.

(b) Name the titrants used in the non-aqueous titration of acidic substances and explain the preparation and standardisation of any one of them.

(c) Write notes on the assay of Thiamine.

7. Write short notes on :

(a) Assay of folic acid in liquid vitamin formulations.

(b) Mass spectrophotometry.

(c) Turbidimetry.

(d) Applications of potentiometric titration.

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NOVEMBER - 1993

[PR 179]

FOURTH B.Pharm DEGREE EXAMINATION.

(Old Regulations)

Paper V — MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks

1. (a) Give an account of the stationary phase and mobile phase used in TLC.

(b) Describe the technique used to detect the spot in TLC, give examples.

(c) What is reverse phase chromatography and its use?

(d) Define *Rf* value and its significance.

2. (a) Define Beer's law and Lamberts law and derive an expression for combined Beer–Lamberts law.

(b) Briefly explain the deviations from Beer– Lamberts law.

(c) Explain the following :

(i) Types of electronic transition when u.v. light is absorbed.

(ii) Detectors used in u.v. and visible spectrometer.

3. (a) What is the difference between Nephelometry and Turbidometry? When Nephelometry is preferred? and why? Explain the application of Nephelometry.

(b) What are the advantages of cerric ammonium sulphate over potassium permanganate as a titrant?

(c) Explain the assay of vitamin B_1.

(d) Fluorimetry is more sensitive and selective than absorption spectrophotometry–substantiate the statement.

4. (a) Explain the construction and working of calomel electrode.

(b) How will you find out the end point in potentiometry?

(c) Write notes on NMR principle.

5. (a) Explain the principle and theory of polarography.

(b) How polarography can be used for quantitative and qualitative analysis?

(c) How will you prepare and standardise aceteous perchloric acid volumetric solution?

6. (a) Explain the following terms with examples.

(i) Legend (ii) Sequestering agent (iii) Aprotic solvent.

(b) Explain the diazotisation titration. What are the methods used in detecting end point in such titrations?

(c) Explain the use of marking and demarking agent in complexometry.

7. Write notes on :

(a) Glass electrode.

(b) Detectors used in gas chromatography.

(c) Column chromatography.

NOVEMBER - 1994

[ND 596]

Fourth B. Pharm Degree Examination

(Old Regulation)

Paper V - MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions

All questions carry equal marks

1. a) Give a detailed account on the principle and various techniques of paper chromatography.
   b) Explain the applications of paper chromatography.
2. Write an essay on the principle and the different types of titration curves in Amperometry.
3. Write Brief notes on
   a) Effect on PH on metal EDTA complex
   b) Reference Electrodes
   c) Assay of Riboflavin in malt extract
4. a) Explain the construction and working of calomel Electrode.
   b) How will you find out the end point in potentiometry?
   c) Write notes on NMR principle
5. a) Explain the principle and theory of polarography
   b) How polarography can be used for quantitative and qualitative analysis?
   c) How will you prepare and standardise aceteous per choloric acid volumetric solution?
6. Discuss briefly on
   a) Diffraction graftings
   b) Radiation sources for U-V spectro photometry
   c) Detectors used in U-V spectro photometry
7. What is Beer lamberts law? Discuss the deviations from Beer's law. Describe construction and working of a double beam spectro photometer.

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SB 601 - APRIL - 1995

ıth B. Pharm. Degree Examination

(Old Regulations)

MODERN METHODS OF PHARMACEUTICA ANALYSIS

Three hours Maximum : 100 marks

Answer any FIVE questions.
All questions carry equal marks

Explain the Principle and methodology of TLC.

What are the common adsorbents used in TLC and the methods of preparing TLC plates?

Mention the different spotting reagents for different classes of natural products. (7+7+6)

Describe complexometric titrations giving the principles and end point detection.

What are different types of complexometric titrations? Give suitable examples.

How is Sod. Edetate solution prepared and standardised? (7+7+6)

What is the principle of polarography as an analytical technique?

b) Discuss the construction and working of dropping mercury electrode (DME).

c) What is Ilkovz equation? What is its significance? (6+7+7)

4. a) Discuss the construction, components and functions of spectro photometer.

b) Explain sample handling in IR spectroscopy.

c) Explain the sources used in IR spectroscopy. (7+6+7)

5) Describe the principles & application of the following. (4x5=20)

a) Turbidimetric analysis

b) Fluorescence

c) Karl fischer reagent

d) Estimation of hardness of water

6. a) Explain the principle and methodology of non-aqueous titrations

b) Discuss the solvents used with their merits and demerits.

c) Give the procedure and reactions of estimation of a weakly basic pharmaceutical compound by non-aqueous titration. (7+6+7)

7. Describe the principle & procedure of assay of the following (4 x 5=20)

i) Hydroxyl compounds

ii) Vitamin A acetate

iii) Ergometrine

iv) Quinine sulphate

SB 606 - APRIL - 1995

606j

B. Pharm DEGREE EXAMINATION

(New Regulations)

V-MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Three hours and a half hours — Maximum : 90 Marks

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)

Answer any TWO questions

1. a) Discuss the principle, procedure involved in paper chromatography
   b) What are the location reagents used in PC
   c) Mention the applications of PC (8+4+3)
2. a) State Lombert-Beer law
   b) With the help of a neat diagram explain working of a double foam spectrophotometer
   c) Add a note on errors in spectrscopy (3+8+4)
3. a) Discuss the theory of potentiometry
   b) Discuss estimation of any one drug by the above technique.
   c) What is dead-stop end point technique. (5+6+4)
4. a) Explain half wave potential and discuss its importance.
   b) Describe the construction and working of HME (6+9)

SECTION - B (6×5=30)

Answer any SIX questions :

5. How is fluorimeter different from colorimeter, with respect to its construction.
6. Add a note on radiation sources used in spectro photometers.
7. Describe the construction and working of a reference electrode used in potentiometric titrations.
8. Add a note on NMR and its applications.
9. Classify and describe complexometric titration methods.
10. Describe briefly. how you will estimate ascorbic acid in powder, tablets and injections.
11. Write a note on paper Electrophoresis.
12. What is diazotization? Give its application in pharm analysis.
13. Explain the terms retention time and retention volume in gas chromatography.

MB 733 - NOVEMBER - 1995

TH B.PHARM DEGREE EXAMINATION
(Old Regulations)
MODERN METHODS OF PHARMACEUTICAL ANALYSIS

hours Max. 100 marks.

Answer any Five questions.
All questions carry equal marks.

the principles involved in adsorption and partition
graphy.
the methods used and discuss in detail a typical
n and partition separation.
e applications of adsorption and partition
graphy. (7+7+6)

tes on the following
Fluorimetry - principle & instrumentation
Detectors used in gas chromatography.
Coating of TLC plates. (7+7+6)

ss the theory of potentiometry
ss the estimation of any drug of your choice by the
chnique.
t is dead stop end point technique in potentiometry?
(7+7+6)

4. Give the principle and application of any Three of the following with suitable examples
   a). Nephelometry
   b). Polarography
   c). Conductometric titrations
   d). NMR (5 X 4 = 20)

5. a). Define absorptivity, molar absorptivity, transmittance and absorbance.
   b). Discuss the design & working of a double beam spectrophotometer, with a neat diagram.
   c). Mention the advantages and applications of double beam spectrophotometer. (6+8+6)

6. Write notes on any Three of the following
   a). Solvents used in non-aqueous titrations.
   b). Indicators used in complexometric titrations
   c). Paper electrophoresis
   d). Application of diazotization in pharm analysis. (7+7+6)

7. Explain the principle and techniques involved in any Three assays
   a). Ascorbic acid in tablets
   b). Thiamine in multivitamin preparations
   c). Quinine suphate in tablets
   d). Ephedrine HCl in tablets. (7+7+6)

NOVEMBER - 1995

MB 738]

Fourth B. Pharm Degree Examination

(New Regulations)

Paper V - MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time: Three hours Maximum 90 marks.

Time and a half hours Sec. A and B: 60 marks

Sec A & 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) Explain the principle and methodology of paper electrophoresis and its application in pharmaceutical industrial estimations.

   b) Explain the use of ion exchange resins in chromatography in separative and estimation analysis with examples.

2. a) Describe the polorographic method of analysis with reference to instrumentation, principle, and different polarographic curves.

   b) Explain the construction and relative sensitivity of different detectors used in spectrophotometers.

3. a) Discuss the principle and working details of quantitative analysis of Quinine sulphate by photo fluorimeter.

   b) Explain the principle of nephalometry and turbidimetry their uses in analysis.

4. a) Describe the construction and working of P^H meter and different electrodes.

   b) Discuss the conductometric estimation apparatus, principle and applications.

SECTION - B (6x5=30)

Answer any SIX questions

5. Explain the essential components of gas chromatography.

6. What are the different dispensing devices used in spectrophotometers and photo colorimeters.

7. Explain amperometric titrations and curves.

8. Explain thiochrome reactions and its uses.

9. Explain principles of mass spectra.

10. What is dead stop end point technique

11. Explain reverse phase chromatography

12. Discuss the principle of flame photometry and its uses.

13. Explain displacement titration in complexo metric titiations.

APRIL - 1996

AK 738

Fourth B.Pharm Degree Examination
(Old Regulations)
Paper V - MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours Max. 100 Marks.

All questions carry equal marks.
Answer any Five questions.

1. a). What do you mean by chromatography? Classify them giving suitable examples.
   b). Explain the construction and working of Gas chromatographic instrument. (4+16)

2. a). Write notes on Ion exchange resins and their applications.
   b). Write an essay on the construction and working of fluorimeter. Mention its pharmaceutical applications (6+14)

3. a). Write notes on the instrument used and applications of a nephelometer
   b). What are reference electrodes? Give examples.
   c). Explain the Glass electrode and its use. (9+3+8)

4.a). Define specific conductance and explain the factors affecting specific conductance.
   b). Give an account of the titration curves of different conductometric titrations. (4+16)

5.a). What are nonaqueous titration? When is it preferred.
   b). What are the titrants used for the non aqueous titrations of acid substances. Explain the preparation and standardisation of any one of them.
   c). Write notes on the masking and demasking agents used in complexometry. (3+9+8)

6. How will you carry out the following assays.
   a). Vitamin A and D capsules
   b). Ascorbic acid
   c). Riboflavin in malt extract
   d). Pyridoxin in vitamin capsules. (4 X 5 = 20)

7. Write notes on:
   a). Levelling effec
   b). Mas spectrometry
   c). Tracer technique
   d). Dropping mercury electrode (3+7+5+5)

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APRIL - 1996

[K 743] Subject Code : 4220

Fourth B. Pharm Degree Examination

(New Regulations)

Paper V - MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours Max. : 90 marks.

Two and a half hours

for Section 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 (2×15 = 30)

Answer any TWO questions.

1. a) Explain the theory and principle of polarography, based on current voltage curve.
   b) Write notes on the construction and working of Dropping mercury electrode. Mention its advantages.
   c) How is polarography used for quantitative and qualitative analysis ? (9+3+3)
2. a) What is HETP ? What is its significance ? What are the factors affecting HETP ?
   b) Write notes on stationary phase, mobile phase, technique, methods used to detect spot and applications of TLC. (3+12)
3. a) Explain the process of fluorescence. What are the factors affecting fluorescence.
   b) What are Ion exchangers ? Write notes on the types of Ion exchange resins with examples and use.
   c) Write notes on the factors affecting nephelometry estimation. (3+9+3)
4. Write the principle and explain the curves for various conductometric titrations. (15)

SECTION—B (6×5 = 30)

Answer any SIX questions

5. Write notes on mass spectrometry.
6. Explain the principle and detection of end point in diazotisation titration
7. Write the principle involved in the assay of
   a) Ascorbic acid
   b) Riboflavin
8. What is reference electrode ? Give examples and explain the construction and working of any one of them
9. Explain the following with examples
   a) Chromophore
   b) Auxochrome
   c) Absorbance
10. Write notes on P^H indicators.
11. Write notes on :
    a) Solvents used in non aqeous titration
    b) Levelling effect
12. What is chromatography ? Classify them with suitable examples. Give their general applications
13. Write notes on the detectors used in UV-visible spectrophotometer.

OCTOBER - 1997

[MS 729] **Sub. Code : 4220**

FOURTH B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper V — MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sections A and B — Sections A & B : 60 marks; 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)

Answer any TWO questions.

1. (a) With the help of diagrams explain the working of DETECTORS used in GAS CHROMATOGRAPHY. (5)

(b) Explain how HPTLC is different from TLC. (4)

(c) What are the different modes of chromatographic separation? Explain the mechanism of separation in the following :

(i) Adsorption Chromatography

(ii) Partition Chromatography

(iii) Ion–exchange Chromatography

(iv) Size exclusion Chromatography. (6)

2. (a) State BEER's law and LAMBERT's law. Which of these is important in UV/visible spectroscopy? Why? Derive an expression from BEER's law to determine concentration from ABSORBANCE. (5)

(b) Explain the working of the following with the help of labelled diagrams

(i) Diffraction Grating (ii) Photomultiplier Tube. (5)

(c) Write the chemistry involved in the estimation of sulfa drugs by Colourimetry. What is the role of Ammonium Sulfamate in it? (5)

3. (a) With the help of diagrams and supported by equations whenever necessary, explain the working of the following :

(i) pH meter. (3)

(ii) Null–point Potentiometer. (3)

(iii) Conductivity Bridge. (3)

(b) Explain the various techniques to determine the end point from a potential–volume curve obtained in potentiometric titrations. (6)

4. (a) Explain the principles of Non Aqueous Titration. Explain the method for the estimation of any weakly acidic drug by Non Aqueous Titration. (6)

(b) How is 0.1N perchloric acid prepared from a commercial sample? How is it standardized? Mention the precautions to be taken during preparation and standardisation. (4)

(c) Explain the concepts "Levelling Effect" and Amphiprotic" solvents in Non Aqueous Titrations. (5)

SECTION B — (6 × 5 = 30)

Answer any SIX questions.

5. With the help of examples explain the differences between Protophillic and Aprotic solvents. Name what category the following solvents fall under :

(a) Glacial Acetic Acid.

(b) Hexane.

6. Explain the meaning of the term preparative TLC. How is it different from TLC?

7. Explain the differences between the construction and working of a Nephelometer and a Turbidimeter (Draw a diagram).

8. With the help of equations, explain Batho Chromic Shift and Hypsochromic Shift.

9. Explain why Lambda Max is used to measure absorbance of a compound. What is Lambda Max? Can the same compound have more than one Lambda Max?

10. What are the factors that affect Fluorescence of molecule? Explain five factors with the help of examples.

11. What are the requirements in a molecule that are necessary for Infra Red absorption? Why are I.R. Spectra more complex compared to U.V. spectra?

12. Explain the meaning of the following terms in Chromatography :

(a) Reverse phase chromatography.

(b) Internal standard.

(c) R_f value.

(d) Solvent Front.

13. With the help of an energy diagram, explain the differences between Phosphorescence and Fluorescence.

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OCTOBER - 1997

[MS 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 for Sections A and B — Sections A & B : 60 marks

Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Enumerate the different types of errors encountered in Pharmaceutical Analysis. Mention the different ways of minimising them. (7)

(b) Give the principle involved and applications of the following techniques : (8)

(i) Counter Current Extraction.

(ii) HPLC.

(iii) Gelfiltration.

(iv) Ultracentrifuging.

2. Give the principle, instrumentation and any four important applications of Gas liquid chromatography. Explain the construction and working of Flame ionisation detector.

3. With the help of suitable examples, explain the following :

(a) Preparative paper chromatography and preparative thin layer chromatograph.

(b) Two dimensional TLC.

(c) Reverse phase chromatography.

4. Describe the various parts in a spectrofluorimeter. Mention any four drugs that can be assayed by fluorimetry. Write a note on Quenching.

SECTION B — (6 × 5 = 30)

Answer any SIX questions.

Each question carries 5 marks.

5. State and explain Beer-Lamberts law. Derive a mathematical expression to relate the concentration and absorbence of a given chromophore. What are the limitations of this law?

6. Describe the apparatus and technique employed in ion-exchange chromatography.

7. Give the principle and any two applications of (a) NMR and (b) ESR.

8. Describe the construction and working of Dropping Mercury Electrode. Give any two applications of polarography.

9. Compare the principles involved in Amperometry and conductometry. Give the construction and working of any one reference electrode.

10. Give the principle and any five applications of spectroscopy.

11. Describe how Ephedrine hydrochloride and Phenobarbitone can be assayed by Non-aqueous titration.

12. How do you prepare and standardise Ceric Ammonium Sulfate and Titanium dioxide? Give any two uses for each of the above.

13. Describe any four detectors used in complexometry. Write a note on masking and demasking agents.

APRIL - 1998

[SV 729] **Sub. Code : 4220**

FOURTH B.Pharm. DEGREE EXAMINATION,

(New 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 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 use of a supporting electrolyte in Polarographic analysis. (5)

(b) Why is it necessary to remove dissolved oxygen from the electrolyte solution before polarographic analysis? How is oxygen removed? (5)

(c) Explain the terms :

(i) Residual current

(ii) Half wave potential. (5)

2. (a) With a diagram write a note on detectors used in :

(i) UV–Visible Spectrometer

(ii) Infra–Red Spectrometer. (10)

(b) Discuss the use of prisms as monochromators. (5)

3. (a) What are the structural requirements of an organic compound for exhibiting fluorescence? (5)

(b) Describe the construction and working of Hydrogen–ion sensitive electrodes. (7)

(c) What is the significance of a Potentiometric titration? (3)

4. (a) Describe in brief the principles and technique involved in Paper Chromatography. (6)

(b) What are bonded phase supports? List out their advantages and applications in Liquid Chromatography. (6)

(c) Compare Gas Liquid Chromatography with Gas Solid Chromatography. (3)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the use of bimetallic electrodes and polarised electrodes in potentiometric titrations. (5)

6. Describe the construction and functioning of Thermal Conductivity Detector. What are its advantages and disadvantages? (5)

7. (a) Explain the principles involved in Turbidimetric analysis. (2)

(b) What are the precautions to be observed for obtaining reproducible results in turbidimetry? (3)

8. Describe the types of Complexometric Titrations and indicators employed in it. (5)

9. Classify the different types of solvents used in Non-aqueous titrations. What do you mean by Levelling effect? (5)

10. State and explain Beer-Lambert's law. Describe a mathematical expression to relate the concentration and absorbance of a given chromophore. When do you see deviations from this law? (5)

11. List out the stationary phases used in Gas Liquid Chromatography. Write a note on the inert supports used in this technique. (5)

12. Define the terms : (5)

(a) Retention time

(b) Retention volume

(c) Chromophore

(d) Specific Retention volume

(e) Hyperchromic shift.

13. Explain with examples the application for Infra Red Spectrometric Analysis. (5)

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APRIL - 1998

[SV 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 separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

1. Write an essay on "Thin Layer Chromatography" substantiating the following :

(a) Stationary phase and Mobile phase and their selection.

(b) Preparation of TLC plates.

(c) Spotting and developing chromatogram.

2. Explain in detail with diagram, the detectors used in the following :

(a) Ultra violet – visible spectrophotometer.

(b) Gas Liquid Chromatography.

3. (a) Define Beer's law and Lambert's law. Derive a mathematical equation for combined Beer–Lambert's law.

(b) What are the types of deviations occur from Beer–Lambert's law?

(c) Explain the significance of monochromators in spectrophotometers.

4. Write explanatory notes on :

(a) Merits and demerits of dropping mercury electrode.

(b) Determination of aromatic primary amines by colourimetry.

(c) Uses of perchloric acid in pharmaceutical analysis.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

5. Explain the principle of exclusion chromatography.

6. Describe the advantages of conductometric titrations.

7. State and explain Ilkovic equation.

8. Explain the use of masking and demasking agents in the estimation of mixture of metal ions by complexometry.

9. Give example of any four drugs which can be assayed by fluorimetry and explain what is quenching.

10. Write the principle involved in Amperometry and Potentiometry.

11. Differentiate between N.M.R. and E.S.R. and give any two applications of each.

12. Explain Chromophore and Liganda with examples.

13. Write a note on relative sensitivities of Nephlometer and Turbidimeter.

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OCTOBER - 1998

[SM 729] **Sub. Code : 4220**

FOURTH B.Pharm. DEGREE EXAMINATION.

(New 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 separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What is λ_{max} and how it is determined?

(b) Explain the working of a double beam spectrophotometer with the help of a neat schematic diagram.

(c) Discuss the principle involved in the estimation of sulpha drugs using visible spectrophotometer.

2. (a) Explain the role of solvents in Non-aqueous titrations. How 0.1 N perchloric acid is prepared and standardised?

(b) Discuss the assay of the following drugs :

(i) Ephdrine hydrochloride.

(ii) Tetracyclines.

(iii) Chlorothiazide.

3. Write short notes on :

(a) Detectors in gas chromatography.

(b) Sample handling techniques in IR spectrophotometry.

(c) Methods to detect end points in potentiometric titrations.

4. Explain the following :

(a) Compare between NMR and E.S.R. spectroscopy.

(b) Chemical shift in N.M.R.

(c) Spin-spin coupling in NMR.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Discuss the role of supporting electrolyte in polarography.

6. Discuss the difference between Nephelometry and Turbidimetry.

7. Explain the significance of indicator electrode and reference electrode. Describe the construction of any one reference electrode.

8. Explain the terms retention volume and retention time. Discuss their importance.

9. Discuss the factors affecting the intensity of fluorescence.

10. Explain how molecular spectra differ from electronic spectra.

11. Explain the principle involved in Ion exchange chromatography.

12. Explain the concept of "Levelling effect" and 'Amphiprotic' solvents in Non-aqueous titrations.

13. Explain the dead stop end point technique.

OCTOBER - 1998

[SM 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 for Sec. A and Sec. B — Sec. A & Sec. B : 60 marks

Section C : 30 marks

Answer Section A and B in separate answer books.

Answer Section C in the separate sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) With a neat diagram, describe the essential parts and functioning of a Fluorimeter. (7)

(b) What are the advantages of fluorescent methods of analysis? Why must a fluorescent assay be carried out at high dilutions? (5)

(c) Write the applications for Nephelometric analysis. (3)

2. (a) Discuss the principle of Partition Chromatography and give experimental details to separate alkaloids by partition chromatography. (12)

(b) What is Reverse Phase Chromatography? (3)

3. (a) With a diagram, describe the construction, working, advantages, disadvantages and applications of Glass electrode and Calomel electrode. (12)

(b) What is a chelate? Give analytical applications of widely used chelating agents. (3)

4. (a) Explain the principle of polarography. What is the importance of Dropping Mercury Electrode and Constant Diffusion Current? (12)

(b) Write a note on Deviations from Beer's law. (3)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

5. (a) What is the significance of Molar absorptivity? (2)

(b) Define : (3)

(i) Bathochromic shift.

(ii) Auxochrome.

(iii) Chromophore.

6. Describe the monochromators functioning in a UV–visible spectrophotometer.

7. Explain the meaning of all parameters included in the Ilkovic equation and briefly describe a method of determination of Diffusion Current.

8. What are the advantages and applications of conductometric titrations?

9. Explain with an example the principle underlying Dead–Stop End Point technique.

10. Discuss the use of Diazotization methods in the analysis of drugs with an example.

11. Describe the technique of Ascending Paper Chromatography and different methods of detection in thin layer chromatography.

12. What are the structural requirements of an organic compound for exhibiting fluorescence?

13. Selecting suitable examples, bring out the importance of Ceric Ammonium Sulphate titrant in Pharmaceutical Analysis.

APRIL - 1999

[SG 729] **Sub. Code : 4220**

FOURTH B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper V — MODERN METHODS OF PHARMACEUTICAL ANALYSIS

Time : Three hours **Maximum : 90 marks**

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

for Section A and 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. Classify chromatographic methods. Describe chromatographic behaviour of solutes. Discuss the principles of gas chromatography with the help of a schematic diagram. (15)

2. (a) With sketches explain the polarographic technique. ($7\frac{1}{2}$)

(b) Explain the following concepts/terms : ($5 \times 1\frac{1}{2} = 7\frac{1}{2}$)

(i) Migration current

(ii) Diffusion current

(iii) Dead stop end point technique

(iv) Hydrogen overpotential

(v) Polarographic maxima.

3. (a) Explain the principle, instrumentation of u.v. spectrophotometer with required illustration. (9)

(b) Explain the following terms and their significance : ($4 \times 1\frac{1}{2} = 6$)

(i) Absorptivity

(ii) Wavelength maxima

(iii) Deviation of Beer's law

(iv) Wave number in I.R. spectra.

4. (a) With a neat sketch explain the construction and working of glass electrode. (5)

(b) Explain the assay of the following : (10)

(i) Pyridoxin in multivitamin capsules

(ii) Accorbic acid in coated tablets

(iii) Vitamin A and D in fish liver oil

(iv) Sulphonamides.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What is Diazotisation? Discuss the indicators used in diazotisation titrations.

6. Give along with appropriate graphs the applications of conductimetric titration (minimum five).

7. Explain the techniques adopted in location of end point in potentiometric titrations (minimum 2 techniques) with drawings.

8. With neat diagram briefly explain the principle and instrumentation, applications of flourimetry.

9. Write briefly with examples the methods used in detection/quantification of components eluted in column chromatography (minimum five).

10. Classify and explain the principle of Ion exchange chromatography with pharmaceutical applications.

11. Write briefly on tracer techniques and their pharmaceutical applications.

12. Explain how selectivity of EDTA titrations can be enhanced with a minimum of five applications.

13. (a) Give I.U.P.A.C. definition for mole. (2)

(b) List out the advantages, disadvantages of cerric ammonium sulphate over potassium permanganate. (3)

APRIL - 1999

[SG 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 separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Explain the theory of partition and the different techniques employed in paper chromatography.

(b) Describe the steps involved in the procedure for obtaining a thin layer chromatogram.

(c) Name the different types of detectors used in GC and explain the working of one of them.

2. (a) Explain the basic features of the polarographic equipment.

(b) Write four applications of polarography in pharmaceutical analysis.

(c) Which region of the IR spectrum is known as 'finger print' region and what is its importance?

3. (a) Explain the use of ceric ammonium sulphate in Pharmaceutical analysis with the help of two specific examples.

(b) Explain the principle of dead stop end point titrations.

(c) Write two applications of UV spectrophotometry in pharmaceutical analysis.

4. (a) Describe the principles and advantages of potentiometric titrations.

(b) Discuss the construction and functioning of electrodes needed to perform acid-base titrations by potentiometry.

(c) Write briefly, the principles of N.M.R. spectroscopy.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

5. What is cell constant? Explain how conductance of a solution is measured?

6. Classify ion exchangers used in chromatography.

7. Discuss the principles of nephelometric analysis.

8. Explain the role of a filter in a colorimeter.

9. With examples explain the use of titanous chloride in pharmaceutical analysis.

10. Write a brief account of counter current extraction.

11. State Beer–Lambert's law and mention its limitations.

12. Describe the conductometric titration method for the assay of a weak acid.

13. Explain the use of masking and demasking agents in the estimation of metal ions by complexometry.

OCTOBER - 1999

[KA 729] **Sub. Code : 4220**

FOURTH B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper V — *MODERN METHODS OF PHARMACEUTICAL ANALYSIS*

Time : Three hours — Maximum : 90 marks

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

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) With neat flow diagram explain the principle, instrumentation of spectroflourimeter. (10)

(b) Enumerate applications of flourimetry in pharmacy (minimum three). (5)

2. Give briefly the principle involved in the assay of the following in pharmaceutical formulations : (5 × 3 = 15)

(a) Ascorbic acid in coated tablets.

(b) Riboflavin in malt extract

(c) Niacin in pharmaceutical preparation containing Iron.

(d) Vitamin A and D in capsules.

(e) Pyridoxin in formulations.

3. (a) Describe with a neat flow diagram the instrumentation of gas chromatography. (10)

(b) Notes on Quantitative analysis by G.L.C. (5)

4. (a) Explain elaborately the salient features of Polarography and its applications in pharmacy. (10)

(b) Lucidly explain the concept of dead stopend point technique with suitable examples. (5)

SECTION B — ($6 \times 5 = 30$ marks)

Answer any SIX questions.

5. (a) Explain the concepts of levelling and differentiating effects with examples. ($2\frac{1}{2}$)

(b) Write briefly the principle involved in assay of EPHEDRINE HCl. ($2\frac{1}{2}$)

6. Write notes on complexometric titrations with adequate examples. (5)

7. Write briefly with illustrations the instrumentation of Nephlometry and its applications. (5)

8. Describe the construction and principle of glass electrode with illustrations. (5)

9. Write briefly the principle of conductimetric titration. Explain the applications of conductimetry supplemented with curves. (5)

10. Briefly explain the technique of Mass spectroscopy. (5)

11. Describe the preparation, development, detection, application of adsorption column chromatography. (5)

12. Briefly explain the following terms in N.M.R. : (5)

(a) Chemical shift

(b) Spin–spin coupling.

13. Explain with illustration and equations the working of diffraction grating. (5)

OCTOBER - 1999

[KA 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 for Sec. A and Sec. B — Sec. A & Sec. B : 60 marks
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. Give an account of theory, grades of papers, mobile phase, various techniques, visualisation of spots and applications of paper chromatography. (15)

2. (a) With a neat diagram, explain the working of spectrofluorimeter. How does it differ from photo fluorimeter? (10)

(b) Explain the use of masking and demasking agents in complexometry. (5)

3. (a) Explain the theory and principles of polarography based on current voltage curve. (10)

(b) Explain the working of any one monochromator. (5)

4. (a) What are the different vibrational modes in polyatomic molecule. Explain with diagram. (7)

(b) With suitable examples explain the following conductometric titrations.

(i) Mixture of strong acid and weak acid Vs strong base.

(ii) Strong acid Vs strong base. (8)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What do you mean by significant figure? Explain the correct use of them in addition and subtraction.

6. Write the principle and applications of Gel permeation chromatography.

7. Define the following :

(a) Absorbance

(b) Absorptivity

(c) Bathochromic shift

(d) Inner filter effect in fluorescence.

8. Give a brief account on chemical shift.

9. Explain the sample preparation for Infra Red study.

10. Explain the preparation and standardisation of aceteous perchloric acid volumetric solution, including precautions to be taken.

11. Explain various types of complexometric titrations with suitable examples.

12. Write notes on the principle and applications of Nephalometry. How does it differ from Turbidimetry.

13. Write notes on the detectors used in Gas liquid Chromatography. (any Two)

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OCTOBER - 2000

[KC 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 for Sec. A & Sec. B — Sec. A & Sec. B : 60 marks
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.

Each question carries 15 marks.

1. (a) With a neat diagram describe the instrumentation for Gas Solid Chromatography. (7)

(b) Explain the principles underlying detection of end point in complexometric titrations with suitable examples. (5)

(c) How do you select a suitable filter for a satisfactory colorimetric analysis. (3)

2. (a) Discuss the applications of Infra–Red Spectrometry in the structure elucidation of chemical compounds. (6)

(b) Describe the construction and working of :

(i) Electron Capture Detector

(ii) Barrier Layer Cell. (7)

(c) What is Two–Dimensional Paper Chromatography? (2)

3. (a) With the help of a diagram, explain the principle and instrumentation used in Polarography. (7)

(b) How do you determine the end points in Potentiometric titrations? (4)

(c) What are the factors affecting the intensity of Fluorescence? (4)

4. (a) Prove that half–wave potential can be used for Qualitative analysis by polarography. (6)

(b) What are the applications of U.V. Spectrometry? (5)

(c) Explain the construction of a conductivity bridge. (4)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

5. Distinguish between Conductometric and Potentiometric titrations.

6. Selecting a suitable example bring out the importance of Perchloric acid titrant in pharmaceutical analysis. How is this titrant standardized?

7. Write a note on the use of Titanous chloride in red–ox titrations. Explain with an example What precautions need to be taken while handling titanous chloride in the laboratory?

8. (a) Differentiate between Fluorescence and Phosphorescence. (3)

(b) Give any two pharmaceutical compounds that can be estimated by Fluorimetry. (2)

9. Write a note on the preparation of plates and types of Adsorbents used in thin layer chromatography.

10. Explain with examples the different types of spectrophotometric titrations.

11. Write a short note on Mass Spectroscopy.

12. Explain the principles of separation in Paper Electrophoresis.

13. List out the different radiation sources present in :

(a) UV – Visible Spectrometer.

(b) Nephelometer.

(c) Infra–Red Spectrometer.

(d) Fluorimeter.

(e) Densitometer.

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