Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – 12-Nov-2021

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. Describe the construction and working of a Gas Chromatography? Emphasize on the ideal characteristics of stationary phases and mobile phases used in Gas Liquid Chromatorgraphy.
2. Outline the working of a double beam recording of UV/Visible spectrophotometer. Name each part of the system and its functioning.
3. Describe the instrumentation of I.R Spectrometry.

SHORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

4. Explain the different modes of fundamental vibrations occurring IR Spectroscopy.
5. Describe the principles and application of electrophoresis.
6. State and derive the mathematical expression for Beer's and Lamberts Law.
7. Explain different types of transitions occurring in absorption spectroscopy.
8. List the applications of UV/Visible Spectroscopy in pharmacy.
9. Write a short note on ORD and give its applications.
10. Briefly describe the sampling techniques in IR for the analysis of solid, liquid and gaseous samples.
11. What are the basic requirements for a nucleus to exhibit NMR phenomenon?

SHORT ANSWERS **10 x 2 = 20 Marks**

12. What is natural frequency of vibration and mention different types of vibrations?
13. What is the effect of conjugation and cross conjugation on λ max?
14. What is Stroke's and Anti-stoke's fluorescence?
15. Define specific conductance and Equivalent conductance.
16. Explain why the intensity of π-π^* transition is more than that of n-π^* transitions.
17. List the function of filters and monochromators.
18. How is the potential selected in Amperometric titrations?
19. What are the three types of fundamental motions of molecules?
20. What are the methods of solvent degassing?
21. Define and explain "Quality Assurance"?

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – 17-Mar-2021

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

ONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

. Discuss the phenomenon of fluorescence. Explain the working of fluorimeter with suitable diagram?

. a) Derive Beer's and Lamberts Law
b) What are the applications advantages and limitations of Beer's law?

. Describe the principle of Potentiometric titrations? Write the construction and working of a calomel electrode and glass electrode?

IORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

Write a note on Guard Column and its significance.

Define partition chromatography and write a note on factors affecting column efficiency.

Explain the procedure to calibrate wavelength of UV Instrument.

Write a note on Frontal Analysis and Bonded Phase Chromatography.

Explain two dimensional and Reverse-phase Chromatography.

How will you perform quantitative analysis in paper chromatography?

. Write a note on factors affecting the separation efficiency of Ion exchange resin.

Explain the concept of pre-dervitization and post dervitization techniques in Gas-Chromatography with relevant examples.

ORT ANSWERS **10 x 2 = 20 Marks**

What is null point potentiometry?

Explain why the intensity of π-π^* transition is more than that of n-π^* transitions.

What are Conductometry and Resistance?

What is relationship between resistance and conductivity?

Principle involved in Grating and Prism monochromators.

Define Specific Conductance and Equivalent conductance.

What is the principle in Amperometric Titrations?

Which is the common detectors in UV absorption spectrometry and outline its functioning?

What is the principle in polorographic analysis?

Define filters and monochromators.

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – 04-Dec-2020

ne: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked

Draw neat, labeled diagrams wherever necessary

IG ESSAYS (answer any two) **2 x 10 = 20 Marks**

Classify the chromatographic methods. Discuss the theory and instrumentation of HPLC.

What are ion exchange resins? Explain the mechanism of ion exchange process and application of ion exchange chromatography.

With the help of neat labeled, schematic diagram, explain the advantages of double beam UV-visible spectrophotometer over single beam.

RT ESSAYS (answer any six) **6 x 5 = 30 Marks**

Discuss in brief the conductometric titrations and give their applications.

Explain the various vibration transitions in I R spectroscopy.

Give a note on interferences in flame photometry.

Distinguish between fluorescence and phosphorescence. Give the various factor affecting fluorescence.

Explain the different source of quality variation.

Explain the construction and working principle of any two detectors used in gas chromatography.

Write the significance of derivatization techniques in Gas chromatography.

Write a note on fundamental vibrations in IR.

RT ANSWERS **10 x 2 = 20 Marks**

Define and classify gratings.

Define electrical potential and electrochemical cell.

Define quality control and Quality Assurance.

Applications of Potentiometer.

Principle of separation in gel electrophoresis.

Define gradient elution and isocratic elution.

List of radiation sources in I R spectrometry.

What is absorption maxima and mention its significance.

Explain the ideal characters of mobile phase in HPLC.

Define transmittance and absorbance in spectrometry.

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – 04-Jan-2020

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked

Draw neat, labeled diagrams wherever necessary

ONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. Explain in detail the detectors used in IR spectroscopy.
2. Explain the principle involved in fluorimetric estimation with the help of two pharmaceutically important compounds.
3. Describe the construction, working and applications of Standard Hydrogen Electrode.

HORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

- Describe the construction and working of a Gas Chromatography
- How do you differentiate between fluorescence and phosphorescence? Give the applications of fluorimetry
- Explain the terms Bathochromic ,hypsochromic, hyperchromic shifts
- Discuss chemical shift and its utilization in NMR spectroscopy
- Discuss the diffraction patterns of X-ray diffraction
- Write a note on Development Techniques in column chromatography
- Explain how do you perform Quantitative analysis in Paper chromatography.
- Describe the principle and applications of Electrophoresis.

IORT ANSWERS **10 x 2 = 20 Marks**

- Define the terms wave length and frequency.
- Effect of P^H on the fluorescence of substance.
- Name any two substances that can be analysed by thermal analysis.
- Name the types of ions used in mass spectra
- Explain the method of estimation of riboflavin
- Give the fuel combination in flame photometry
- What is self quenching
- Define Chromatography & Rf values
- How is activation of TLC plates done?
- What is an ion-exchange resin? Give an example of natural resin a) Cation b) Anion

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – JUNE-2019

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. Write principle, stationary phase, mobile phase, development techniques and Applications of column chromatography.
2. Discuss principle of polarography and method of analysis by using Dropping Mercury Electrode (DME).
3. With the help of a neat labeled schematic diagram of Gas chromatographic assembly, explain the principle of separation.

SHORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

4. Explain in detail the detectors used in IR spectroscopy.
5. Explaiin the methodology used in multicomponent system in UV-Visible spectroscopic technique.
6. Enumerate the different reference electrodes & Indicators electrodes in potentiometric titrations.
7. Write a note on factors affecting the separation efficiency of Ion exchange resin.
8. Define Validation? Explain types of "process Validation"?
9. What is quenching? Explain various types of quenching with suitable examples?
10. Write a detailed note on spectrophotometric titrations with suitable examples.
11. How do you relate fluorescence intensity to concentration? Describe any four factors that influence fluorescence intensity.

SHORT ANSWERS **10 x 2 = 20 Marks**

12. What is an ion-exchange resin? Give an example of natural resin a) Cation b) Anion.
13. What is TLC & Write the principles of separation in TLC.
14. What are the requirements for a compound to be analyzed by Gas- Liquid Chromatography.
15. Give example of carrier gas used in G.L.C.
16. What is potentiometry? How is potential (emf) is measured.
17. What are auto titrimeters? What is the principle of operation?
18. Reasons for Deviation of Beer's law.
19. Write various ranges of electromagnetic spectrum.
20. Define filters and monochromators.
21. Name the factors that influences fluoresence intensity.

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – DEC-2018

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked

Draw neat, labeled diagrams wherever necessary

)NG ESSAYS (answer any two) **2 x 10 = 20 Marks**

Explain how you differentiate between atomic absorption spectroscopy from atomic emission spectroscopy. Give anote on photographic and photoelectric detectors

Explain Beer-Lambert's Law. Discuss its applications, deviation and limitation of Beer – Lamberts law.

Describe the principle and developmental techniques in chromatography. Add a note on adsorbents used in chromatography.

ORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

With a neat labeled diagram, explain the principle and instrumentation of HPLC

Write principle, stationary phase, mobile phase, development techniques and applications of paper chromatography.

Write the structure and chemical name of BMR Reagent. Write the principle involved in the reaction of BMR.with Sulphanilamide along with chemical reactions

What is the effect of polar& Non-polar solvent on π-π^* transition of alkenes? Give one example of each case with λmax and Σ values

Write a short note on factors affecting fluorescence.

What is the minimum requirements for molecules to show I.R bands. State selection rule for exhibiting IR Vibrations.

Write a note on developmental techniques used in Paper chromatography.

Enumerate the different reference and indicator electrodes in Potentiometry.

)RT ANSWERS **10 x 2 = 20 Marks**

What is the difference between silica gel H,G and GF

Explain Radial Chromatography

Write a note on Guard Column & its Significance

Name the factors which affect potential of a solution

Why is DME used? What are the advantages

What changes in the molecules occur when the following is passed a) UV/Visible radiation b) I.R radiation

Differentiate between fluorescence from phosphorescence

What are the three types of fundamental motions of a molecules

Define & explain "Quality Assurance".?

What is Stoke's & Anti-stoke's fluorescence

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – NOV 2017

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

.ONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. With a neat labeled diagram, explain the working principle and instrumentation of HPLC
2. Describe the principle ofa Potentiometric titrations? Write the construction and working of a calomel electrode & glass electrode?
3. Explain various methods of preparing TLC plates and its applications.

HORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

4. Explain the concepts of statistical quality control
5. What is the principle in a) Normal-Phase Chromatography b) Reverse –Phase Chromatography c) Ion- Exchange Chromatography d) Ion-pair Chromatography
6. Write a brief note on HPTLC
7. Explain the term- Red Shift, Blue Shift, hypochromic shift, hyperchromic shift giving suitable examples for each along with λmax and ∑ values.
8. Write a note on ICH Guidelines
9. Explain the principle underlying "Dead- Stop end point technique" and Null point potentiometry
10. What is the principle involved in conductometric titrations? Explain with the help of different titration curves.
11. What is Nebulization? Write a note on burners used and their significance.

IORT ANSWERS **10 x 2 = 20 Marks**

12. Explain the various region of electromagnetic spectrum
13. Mention the electronic transitions in UV spectroscopy
14. Differentiate between fluorescence from phosphorescence
15. What is self quenching
16. Give the application of ESR
17. What is K-band? Give example
18. How is the efficiency of an ion-exchange resin measured?
19. What is C_{18} or ODS? What is its use in Chromatography
20. What is the relationship between emf & pH?
21. What are auto titrimeters? What is the principle of operation?

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Rajiv Gandhi University of Health Sciences, Karnataka

Time: Three Hours III Year Pharm-D Degree Examination – NOV 2017 **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

.ONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. With a neat labeled diagram, explain the working principle and instrumentation of HPLC
2. Describe the principle ofa Potentiometric titrations? Write the construction and working of a calomel electrode & glass electrode?
3. Explain various methods of preparing TLC plates and its applications.

HORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

4. Explain the concepts of statistical quality control
5. What is the principle in a) Normal-Phase Chromatography b) Reverse –Phase Chromatography c) Ion- Exchange Chromatography d) Ion-pair Chromatography
6. Write a brief note on HPTLC
7. Explain the term- Red Shift, Blue Shift, hypochromic shift, hyperchromic shift giving suitable examples for each along with λmax and Σ values.
8. Write a note on ICH Guidelines
9. Explain the principle underlying "Dead- Stop end point technique" and Null point potentiometry
10. What is the principle involved in conductometric titrations? Explain with the help of different titration curves.
11. What is Nebulization? Write a note on burners used and their significance.

IORT ANSWERS **10 x 2 = 20 Marks**

- Explain the various region of electromagnetic spectrum
- Mention the electronic transitions in UV spectroscopy
- Differentiate between fluorescence from phosphorescence
- What is self quenching
- Give the application of ESR
- What is K-band? Give example

How is the efficiency of an ion-exchange resin measured?

What is C_{18} or ODS? What is its use in Chromatography

What is the relationship between emf & pH?

What are auto titrimeters? What is the principle of operation?

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Rajiv Gandhi University of Health Sciences, Karnataka

III Year Pharm-D Degree Examination – May 2017

Time: Three Hours **Max. Marks: 70 Marks**

PHARMACEUTICAL ANALYSIS (RS & RS2)

Q.P. CODE: 2862

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (answer any two) **2 x 10 = 20 Marks**

1. E xplain Beer-Lambert's Law. Discuss its applications, deviation and limitation of Beer Lamberts law.
2. Define paper chromatography? What are the modes of development of paper chromatography & Enumerate the application of paper chromatography
3. What is electrophoresis? Discuss the principle and applications of electrophoresis.

SHORT ESSAYS (answer any six) **6 x 5 = 30 Marks**

4. Write on theory, carrier gases and stationary phases used in gas chromatography.
5. Explicate the types of fluorescence quenching with examplesand give the application of fluorimetry to pharmaceuticals
6. What are the reference and indicator electrodes use in potentiometric titrations. Explain construction, working and advantages of one electrode from each of the type
7. What are the basic components of a HPTLC instrument? Explain the advantages and application of HPTLC in pharmacy
8. What are the vibrations occur in a molecule on IR absorption? Give the elements of interpretation of an IR spectrum of a molecule
9. Explain the concepts of statistical quality control.
10. Explain with the help of neat diagram working of any two detectors used in GC.
11. Explain the methods of detecting end point in Potentiometric titrations.

HORT ANSWERS **10 x 2 = 20 Marks**

12. Give the principle and application of NMR
13. What are the differences between atomic absorption and flame emission spectroscopy
14. What are amperometric titrations
15. What is validation? What are the different methods used?
16. How does a good laboratory practice performed in an industry
17. Write a note on Dropping Mercury Electrode (DME).
18. What is null point potentiometry
19. Explain the various regions of electromagnetic spectrum
20. Give the applications of ESR
21. Spectrophometric titration.

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