MPAN20112

M.Pharmacy Degree Examinations - August,2019

II Semester - Pharmaceutical Analysis

Paper- I: Spectroscopic Methods of Analysis

(Regulation 2012-13)

Time : Three Hours **Maximum Marks: 70**

Answer all questions. All questions carry equal marks.

1. Enumerate the principle, procedure and applications of the following chromogenic reagents used in Colorimetry
   a) PDAC b) MBTH

OR

2. a) Discuss about various electronic transitions observed in organic molecule 8M
   b) Define the following 6M
   (i) Chromophore (ii) Bathochromic Shift (iii) Hypochromic Shift

3. a) Enumerate the sampling techniques in IR-Spectrometry
   b) Write the differences between Dispersive IR and FTIR

OR

4. Discuss the principle and instrumentation involved in Raman spectroscopy

5. a) Write the principle and theory involved in FT- NMR.
   b) What is coupling constant? Explain various factors affecting coupling constant.

OR

6. Define chemical shift and discuss various factors affecting chemical shift.

7. Enumerate any four ionization techniques in Mass Spectrometry.

OR

8. a) Discuss the fragmentation pattern for alkyl halides in Mass spectrometry.
   b) How do you identify the presence of hydroxyl and amino groups in compounds by using mass spectrum?

9. Write the principle and applications of Atomic Absorption Spectrometry.

OR

10. Enumerate the analysis of Group- IA elements by Atomic Absorption Spectrometry.

MPPC20112

M.Pharmacy Degree Examinations - August, 2019

II Semester - Pharmaceutics

Paper- I: Advances in Drug Delivery Systems-I

(Regulation 2012-13)

Time : Three Hours **Maximum Marks: 70**

Answer all questions. All questions carry equal marks.

1. Explain in detail about physicochemical and biological factors influencing the design of sustained release dosage forms

Or

2. Give the classification of polymers used in the formulation of controlled drug delivery systems and add a not on role of biodegradable polymers in sustained drug delivery

3. Enumerate various formulation approaches for parenteral sustained drug delivery systems and add a note on advantages and disadvantages for parenteral controlled drug delivery systems.

Or

4. Explain in detail about various types of oral controlled drug delivery systems and add a note on evaluation of oral controlled drug delivery systems.

5. Enumerate various formulation approaches for ocular drug delivery with relative advantages and disadvantages.

Or

6. Enumerate various factors effecting the bioavailability of drugs following intranasal administration and add a note on nasal permeation enhancers.

7. What are the advantages and disadvantages of nanoparticles as drug carriers and explain in detail about emulsion polymerization and solvent evaporation methods for preparation of nanoparticles.

Or

8. Explain in detail about monoclonal antibodies as drug delivery systems.

9. Explain in detail about various approaches for targeting of drugs to brain.

Or

10. What are the advantages and disadvantages of pulmonary drug delivery and add a note on metered dose inhalers in pulmonary drug delivery.

MPPH20112

M.Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutical Chemistry

(Regulation 2012-13)

Paper-I: Advanced Organic Chemistry-II

Time : Three hours | Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. What are the various approaches in retro synthesis of organic compounds? Write about Linear synthesis and convergent synthesis.

   OR

   Write about disconnection of strategic bonds in carbocyclic and heterocyclic rings with suitable examples.

2. Write the importance of stereochemistry in drug action. Write a note on stereo selective and stereo specific reactions with examples.

   OR

   Write the chiral drug synthesis of Ibuprofen and Ramipril.

3. What is green synthesis? Importance, reagents, solvents and catalysts in green chemistry. Write their applications.

   OR

   Write in detail about the microwave reaction procedures using water and organic solvents with examples. What are the advantages of microwave techniques?

4. Write the various reactions involving Pyridine-N-Oxide, hydroxy pyridines and pyridine aldehydes and ketones.

   OR

   Write the chiral drug synthesis of Propranolol and Levofloxacin.

5. Write the methods of synthesis of Quinolines, Pyrazines and Imidazoles.

   OR

   Write two methods of synthesis of Indoles, isoquinolines and benzimidazoles.

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MPAN20212

M.Pharmacy Degree Examinations - August,2019

II Semester - Pharmaceutical Analysis

Paper- II: Advanced Analytical Techniques

(Regulation 2012-13)

Time : Three Hours Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. Explain about X-Ray Powder Diffraction method with its applications.

Or

2. a) How will you determine particle size by X-ray technology?
   b) Discuss the applications of X-ray diffraction method to analyze complexes.

3. a) Enumerate the principle and instrumentation involved in DTA.

Or

4. a) Explain ideal differential thermogram.
   b) Discuss various factors affecting differential thermogram.

5. a) Discuss Fluorescence and Phosphorescence.
   b) Explain the factors affecting Fluorescence.

Or

6. a) Write the advantages of Spectrofluorimetry over UV-Spectrophotometry.
   b) Explain the applications of Spectrofluorimetry.

7. Describe the instrumentation of ORD and CD Spectroscopy.

Or

8. a) What are Faraday and Kerr effects?
   b) Define circular dichroism. How it is different from ORD?

9. Explain the principle and applications involved in Plasma Emission Spectroscopy.

Or

10. Write the principle, procedure and applications involved in RIA.

MPPC20212

M. Pharmacy Degree Examinations- August-2019

II Semester - Pharmaceutics

Paper-II: Advanced Bio Pharmaceutics

(Regulation 2012-13)

Time : 3 hrs Maximum Marks: 70

Answer All Questions

All questions carry equal marks

1. Classify and explain various mechanisms for drug absorption in GIT.

(or)

2. Enumerate and explain various physiological factors influencing absorption of drugs.

3. Explain how pKa value, lipophilicity and GI pH influences the absorption of drugs.

(or)

4. Enumerate and explain various techniques for enhancing dissolution rate of drug.

5. Explain in detail about Pharmaco technical factors influencing bioavailability of drugs.

(or)

6. Write the influence of Pharmaceutical Ingredients, nature and type of dosage form effects absorption of drugs.

7. What are the various official apparatus for dissolution testing as per USP? Explain them in detail.

(or)

8. What is In Vitro - In Vivo correlation? Explain the various approaches for establishing in Vitro -In Vivo Correlation

9. Define Bioavailability. What are the objectives of bioavailability studies. Explain the Pharmacokinetic methods for measurement of bioavailability.

(or)

10. Define Bioequivalence. Explain various study designs employed for bioequivalence studies with their advantages and disadvantages.

MPPH20212

M.Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutical Chemistry

(Regulation 2012-13)

Paper-I: Advanced Medicinal Chemistry

Time : Three hours Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. Write briefly about sources of new drugs, lead molecules from natural products, their molecular modification. What is High through put screening?

   OR

   What are prodrugs? Write their applications. Give suitable examples.

2. Give an account on Recombinant DNA technology in drug discovery. What are soft drugs? Write their importance.

   OR

   What are the various methods and parameters in QSAR? Write about equations in linear regression analysis.

3. Write briefly about Hansch Analysis and Hansch equation. A brief account on 3D QSAR method like CoMFA, their advantages and disadvantages.

   OR

   What is computer aided Drug Design? What are the parameters to be considered in designing a drug? Write a note on computational chemistry.

4. Write briefly on Tea bag method and Pin method. Write about Heterocyclic libraries in combinatorial chemistry.

   OR

   Write briefly on G-coulpled colourimetric and flourometric methods in High throughput screening.

5. Classify anti-viral drugs with suitable examples. What are the steps involved in developing a new anti-viral drugs? Write the MoA and synthesis of Stavudine.

   OR

   What are the biochemical basis of mental disorders? Classify anti psychotics with examples. Write the SAR, MoA and toxicity of phenothiagines. Write the synthesis of chlorpromazine.

MPAN20312

M.Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutical Analysis

(Regulation 2012-13)

Paper-III : Quality Assurance and Quality Control

Time : Three hours | Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. Describe the quality control tests for capsules and Parenterals.

(OR)

2. Write the concepts and philosophy of ISO-9000.

3. Explain the principles of GMP. Add a note on GMP specifications of sterile area.

(OR)

4. Explain about quality audits of manufacturing process.

5. a) Write about raw materials purchase specifications and selection of vendors
   b) Discuss about line clearance

(OR)

6. Discus the various components of ware house in Pharma industry. What are the principles of Good Ware housing Practices?

7. What is the significance of Documentation in Pharmaceutical industry? Discuss about waste and scrap disposal procedures and their related records.

(OR)

8. What do you mean by SOP? Discus the types and importance of SOP's in Pharmaceutical industry.

9. What is a complaint? How will you evaluate a complaint? Enumerate the recall protocol.

(OR)

10. How do you evaluate the quality of cartons and other packaging materials? Add a note on bulk packaging.

MPPC20312

M. Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutics

(Regulation 2012-13)

Paper-III : Advanced Pharmacokinetics

Time : Three hours | Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. Classify various pharmacokinetic models. Write the differences between compartment and physiological model. Add a note on applications of pharmacokinetic models.

(or)

2. Derive the equations for calculation of pharmacokinetic parameters when a drug is administered by IV bolus administration follows one compartment model.

3. Discuss the various reasons for non linearity. Write Michaelis Menten equation and explain how it transforms in various conditions?

(or)

4. What are the limitations in calculating K_m and V_{max} by assuming one compartment open model and single capacity limited process?

5. Explain in detail about various approaches for delivering drugs with chrono pharmacokinetics.

(or)

6. Explain in detail about physiologically induced time dependent pharmacokinetics.

7. Define metabolism. Explain in detail about Phase-I reactions with suitable examples

(or)

8. Explain various factors effecting metabolism of drugs.

9. Define drug interactions. Explain ADME interactions with suitable examples.

(or)

10. a) Enlist and discuss the factors that contribute to drug interactions.
    b) What are the various ways of reducing risk of drug interactions?

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MPPH20312

M.Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutical Chemistry

(Regulation 2012-13)

Paper-III : Chemistry of Natural Products

Time : Three hours Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. Write in detail on endorphins and enkephalins.

   OR

   Classify ergot alkaloids. Write in brief on their biological significance. Add a note on semisynthetic ergot alkaloids.

2. Write SAR, MOA and clinical significance of pogophyllotoxin.

   OR

   Why microbes are considered as a very rich sources for obtaining novel drugs. Add a note on anticancer antibiotics.

3. Write structures of sex hormones and compare their chemistry with cholesterol. Write in brief on SAR of corticosteroids.

   OR

   Discuss the rationale for development of antifertility agents.

4. Write in detail on chemistry and development of cephalosporins. Add a note on their β-lactamase resistance.

   OR

   Write in detail on β-lactamase inhibitors.

5. Write the structure elucidation of the following by UV, IR, NMR and Mass spectral analysis of Nicotine.

   OR

   Write the structure elucidation of the following by UV, IR, NMR and Mass spectral analysis of Estrone.

MPAN20412

M.Pharmacy Degree Examinations - August, 2019

II Semester - Pharmaceutical Analysis

Paper- IV: Validation and Documentation

(Regulation 2012-13)

Time : Three Hours **Maximum Marks:70**

Answer all questions
All questions carry equal marks

1. a) Explain in detail about the general validation techniques of an equipment? 7
   b) What is revalidation? Add a note revalidation. 7

Or

2. Write about the following
   a) Audit policy 7
   b) Data generation 7

3. What is the principle involved in an analytical method validation. Write about the validation process of Dissolution test apparatus. 14

Or

4. What are the various sources of plasma? Explain in detail with a neat diagram about the instrumentation and applications of plasma emission spectroscopy.

5. Write about the validation process of following equipment?
   a) Autoclave 7
   b) HPLC 7

Or

6. Explain about pre approval inspection of tablet manufacturing area.

7. What are the different type's water supply systems? Write about the validation process of deionized, distilled water and water for injection. 14

Or

8. Write in detail about the importance of documentation in pharmaceutical manufacturing. Add short notes on GLP and its history.

9. Explain in detail about the calibration of following.
   a) Visible spectrophotometer 7
   b) Dry heat sterilization 7

Or

10. Write about the filtration and filling processing techniques in liquid dosage forms.

MPPC20412

M.Pharmacy Degree Examinations - August, 2019

II Semester - Pharmaceutics

Paper- IV: Advances in Drug Delivery Systems-II

(Regulation 2012-13)

Time : Three Hours **Maximum Marks:70**

Answer all questions
All questions carry equal marks

1. Explain in detail about physiological factors affecting the oral bioavailability of drugs.

Or

2. Discuss the role of epithelial cells in drug absorption.

3. Explain in detail about viral and non viral vectors for gene therapy.

Or

4. Explain in detail about various types of physical methods for gene delivery systems.

5. Define genomics and proteomics and explain in detail about their role in drug discovery and targeting.

Or

6. What is the role of genetic polymorphism in drug disposition and drug responses?

7. What are the various formulation strategies for delivery of proteins and peptide drugs?

Or

8. What are the various methods of preparing the engineered proteins by DNA technology?

9. Explain in detail about the role of absorption enhancers and lipid carrier systems in vaccine development.

Or

10. Explain in detail about the role of biodegradable polymers in vaccine development with relative advantages and disadvantages.

MPPH20412

M.Pharmacy Degree Examinations - August, 2019

II Semester – Pharmaceutical Chemistry

(Regulation 2012-13)

Paper-IV : Spectral Analysis

Time : Three hours Maximum Marks: 70

Answer any FIVE questions.
All questions carry equal marks

1. (a) Discuss the factors influencing λmax of an organic compound. Add a note on derivatization methods used in UV spectroscopy.

OR

(b) How can IR spectroscopy helps in
i) identification of a functional group
ii) chemical stability of drugs in formulation

2. Write in detail on
i) D_2O exchange NMR spectrum
ii) Estimation of enantiometric excess using 1HNMR

OR

Draw the predicted 1HNMR spectrum of 3-methylbutanaldehyde and discuss the splitting pattern and coupling constants.

3. Differentiate ^{1}H and ^{13}C NMR spectra. Write in brief on DEPT technique. Explain why conjugated double bond brings downfield shift in ketone carbon.

OR

Draw predicted 13C NMR spectrum and DEPT spectrum of Phenylacetic acid. Explain the chemical shift patterns observed for the aromatic carbons.

4. Write a note on ionization techniques used in mass spectrometry, their advantages and disadvantages. Suggest an appropriate ionization technique for the mass spectral analysis of i) Insulin and ii) aspirin

OR

What is High Resolution Mass Spectrometry (HRMS)? Write in detail on its instrumentation and applications.

5. Write in detail on the principle, procedure and applications of COSY technique. Draw the predicted COSY spectrum of but-1-ene(H_2C=CH-CH_2-CH_2)

OR

Explain the principle, procedure and applications of HMBC technique. Draw the predicted HMBC spectrum of pent-2-yne.
