Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: PHARMACEUTICAL ANALYSIS-2 (PQA 402T)

(REVISED REGULATIONS 2014)

Thursday, July 11, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Define terms Chromophore and Auxochrome with suitable examples. Discuss the shifts in the UV spectrum with appropriate examples.

(4+6 = 10 marks)

2. Write a note on plate and rate theories of chromatography.

(10 marks)

3. What are the various methods of detecting end point in potentiometric titrations? Explain.

(10 marks)

4. **Short essay:**

4A. What are control charts? Explain their types.

(5 marks)

4B. What are the parameters influencing the selection of a chromatographic method?

(5 marks)

4C. With the help of schematic diagram, explain the working of Michelson Interferometer employed to Fourier transform IR spectrum

(5 marks)

4D. Enlist and explain the interferences encountered in AAS.

(5 marks)

4E. i) Discuss the basic principle of NMR Spectroscopy.
ii) Draw a neat and labelled diagram of polarimeter.

(3+2 = 5 marks)

4F. Classify ionization techniques in mass spectroscopy. Explain in detail Matrix Assisted Laser Desorption Ionization (MALDI).

(5 marks)

5. **Give reasons for the following:**

5A. List the purpose of sampling.

5B. Classify light scattering with one example each.

5C. Enlist the applications of fluorimetry.

5D. Name different thermal events observed in the typical thermogram.

5E. Explain in short the basic principle of Radio Immuno Assay (RIA).

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: INSTRUMENTAL AND BIOMEDICAL ANALYSIS (PQA 402)

(CREDIT BASED SYSTEM)

Monday, July 22, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 50

- **Answer ALL the questions.**
- **Draw neatly labeled diagram wherever necessary.**

Long Essay:

1A. Explain the location of end point using normal curves in potentiometric titrations.

1B. Write and explain the terms in Ilkovic equation. What is its importance?

(4+4 = 8 marks)

2A. Explain the factors affecting R_f value in paper chromatography.

2B. Explain the working principle of detectors used in HPLC in brief.

(4+4 = 8 marks)

3A. Describe the construction and working of colorimeter.

3B. What are the types of electronic transitions observed, when organic molecules absorb UV radiations? Give examples.

(4+4 = 8 marks)

4. **Short Essay:**

4A. i) Why IR spectrometer is housed in humidity free conditions?

ii) Write the applications of circular dichroism and X- ray diffraction studies.

(2+2 = 4 marks)

4B. Explain any four elements of GLP.

(4 marks)

4C. i) What are NMR and ESR?

ii) Define and classify automization.

(2+2 = 4 marks)

4D. How pharmaceutical compound estimated fluorimetrically? Explain with the help of examples.

(4 marks)

5. **Short answer:**

5A. Give the applications of electrophorosis

5B. What is nephelo-turbidometry? Give its applications.

5C. Write the schematic diagram of polarimeter and inductively coupled plasma source.

5D. Mention the types of mass spectrometer and differential scanning calorimeter.

5E. Explain the function of hallow cathode tube.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: INDUSTRIAL PHARMACY (PCE 403T)

(REVISED REGULATIONS 2014)

Saturday, July 13, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

✍ **Answer ALL the questions.**

1. **Long Answer Questions:**

1A. Define lipstick. Enlist a standard lipstick formula mentioning use of each ingredient and briefly explain the manufacturing procedure.

(10 marks)

1B. Define parenterals? Explain any three methods to determine the presence of pyrogens in the sterile products.

(10 marks)

1C. Describe 4 problems commonly encountered during tablet compression and reasons for the same. Explain the disintegration test and test for uniformity of content along with the limits

(5+5 = 10 marks)

2. **Short Answer Questions:**

2A. Define microcapsule. Explain any two methods for preparation of microcapsules.

2B. Enlist the different types of packaging materials. Explain glass as a packaging material.

2C. Define Validation. Classify Validation. Explain any one type of Validation.

2D. Describe the extraction process of gelatin with a suitable flowchart.

2E. Mention different methods of preparation of Liposomes and explain any ONE method.

2F. What are different approaches to increase the solubility of drugs in formulating Liquid Orals? Explain any ONE approach.

(5 marks × 6 = 30 marks)

3. **Give Reasons for the Following:**

3A. Direct compression is not suitable for high dose drugs

3B. Mixing and stirring operations are critical in industrial processing of emulsified semisolids

3C. Novel drug delivery systems are better than conventional dosage forms

3D. Surfactant needs to be incorporated in formulation of shampoo.

3E. Type IV glass is also called as Type NP glass.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: INDUSTRIAL PHARMACY (PCE 403)
(CREDIT BASED SYSTEM)

Tuesday, July 16, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A Define Liposomes. Enlist the various methods for preparation of Liposomes and explain any two methods.

(8 marks)

1B Mention different methods used to measure the tonicity in sterile products and explain Class I methods of tonicity adjustment in detail.

(8 marks)

1C Discuss the various types of problems seen in tablets during tablet manufacturing and reasons for the same

(4+4 = 8 marks)

2. **Short notes:**

2A List pharmaceutical factors influencing selection of ointment base. Describe the preservative efficacy test and test for release of drug from ointments.

(2+2 = 4 marks)

2B How lipsticks are formulated? Explain with a suitable formula

(4 marks)

2C Explain different filling methods of Liquid Orals

(4 marks)

2D What are different manufacturing methods of SOFT gelatin capsules? Explain Rotary die process with a neat diagram.

(4 marks)

3. **Short answers:**

3A Define glass. What are different types of glass used in pharmaceutical packaging?

3B Write the principle involved in "LAL" test.

3C List the diagnostic uses of a radiopharmaceutical

3D Define Bloom strength and base absorption.

3E Classify propellants with examples

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: MEDICINAL CHEMISTRY - II (PCH 404T)

(REVISED REGULATIONS 2014)

Tuesday, July 16, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long Answers:**

1A. What are anthelmintics? Classify them with one example and its structure from each class. Outline the synthesis of Pentamidine and mention its uses.

1B. i) What are antidepressants? Classify them with one example and its structure.

ii) Classify Sulpha drugs with examples.

(5+5 = 10 marks)

2A. Write the structure and uses of

i) Amoxacillin, ii) Chlortetracycline, iii) Cefotaxime, iv) Erythromycin.

2B. Explain the chemistry and SAR of amino glycoside antibiotics. Write the synthesis of Chloramphenicol.

(4+6 = 10 marks)

3A. What are prodrugs? Give examples. Explain the different types of prodrugs with examples.

3B. Outline the synthesis and uses of

i) Amantadine ii) Trimethoprim. iii) Clotrimazole

(4+6 = 10 marks)

4. **Short Answers:**

4A. Explain the SAR of barbiturates with Examples and structure.

4B. Classify antimalarial agents giving the structure of one agent from each class and Outline the method of synthesis of Chloroquine.

4C. Name the three basic mechanism of AED. Explain the mechanism of phenytoin with help of hypothetical diagram. Write the synthesis of Clozapine.

4D. Discuss in detail the MOA of anticancer antibiotics with two structures.

4E. i) Define antiparkinsonian drugs and classify with one example from each class with its structure.

ii) What is the need for combination therapy in antiviral treatment?

4F. Write the structure, MOA and uses of diatrizoate and norfloxacin.

(5 marks × 6 = 30 marks)

5. **Give reasons:**

5A. Epinephrine is used with local anesthetic.

5B. Some people develop allergy to Pencillin G.

5C. Enflurane is preferred over Halothane.

5D. Third generation Cephalosporins are more active against gram negative organisms

5E. Chlorazepate is a prodrug.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: MEDICINAL CHEMISTRY – II (PCH 404)

(CREDIT BASED SYSTEM - REGULAR)

Friday, July 26, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. i) List out the characteristic features of an ideal general anesthetic.
ii) Outline the synthesis of Metronidazole and mention its uses

1B. Outline the synthesis of chlorpromazine and mention its uses.

(5+3 = 8 marks)

2A. Classify antimetabolites giving the structure of one agent from each class and Outline the method of synthesis of cyclophosphamide.

2B. Classify antibiotics giving one structure from each class.

(5+3 = 8 marks)

3A. Explain the SAR of local anesthetics. Outline the synthesis of Procaine.

3B. Define combinatorial chemistry with an example. Explain solid phase synthesis with an example.

(5+3 = 8 marks)

4. **Short Answers:**

4A. i) List out the important structural features of butyrophenone with two examples.
ii) Outline the synthesis of Imipramine and mention its uses.

4B. Discuss the importance of combination therapy in anti malarial treatment with an example. Give the method of synthesis of proguanil.

4C. Classify antifungal agents with example and structure of one compound under each class. Outline the synthesis of Fluoxetine and mention its uses.

4D. Classify quinolones and discuss the SAR of quinolones. Outline the method of synthesis of ofloxacin.

(4 marks × 4 = 16 marks)

5. **Short answers:**

5A. Outline the synthesis of INH and mention its uses.

5B. Write the structure and uses of Amoxacillin and Cefotaxime

5C. Why Epinephrine is used with local anesthetic?

5D. Write the structure and uses of Streptomycin and Erythromycin.

5E. Outline the synthesis of Amantidine and mention its uses.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: MEDICINAL CHEMISTRY – II (PCH 404)

(CREDIT BASED SYSTEM - REPEATERS)

Friday, July 26, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. Give the classification of antihypertensives with structure of one agent from each class. Write the synthesis of Nifedipine

1B. Explain the MOA of ACE inhibitors as antihypertensive agents giving the structures of two of them. Write the synthesis of Isosorbide Dinitrate

(4+4 = 8 marks)

2A. Give the chemistry, MOA and specific uses of antimetabolites as anticancer agents and write the method of synthesis of Methotrexate.

2B. Write the structure and uses of two amino glycoside antibiotics. Give the synthesis of phenoxy methyl penicillin.

(4+4 = 8 marks)

3A. Write the structure, MOA and uses of the following.

i) Metronidazole ii) Mebendazole.

3B. Outline the synthesis of Nitrofurantoin and Griseofulvin. Add a note on their mechanism of action.

(4+4 = 8 marks)

4. **Short Essays:**

4A. Classify antihyperlipidemic agents with examples. Write the MOA and synthesis of Glibenclamide.

4B. Explain the mechanism of action of antiviral drugs. Write two structures of antiviral agents used in the management of Herpes virus and two structures of anti-aids drugs.

4C. Explain the SAR and stereochemistry of penicillins.

4D. Write the SAR of amino quinolines. Give the synthesis of Proguanil.

(4 marks × 4 = 16 marks)

5. **Short Answers:**

5A. What are diagnostic agents? Write the synthesis of Iopanoic acid.

5B. Write the synthesis of Chlorthiazide and mention its use.

5C. Write the structure and uses of two antiestrogens.

5D. Outline the synthesis of hydrocortisone.

5E. Write structures of any two anti TB antibiotics.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: PHARMACOLOGY – II (PHA 405T)

(REVISED REGULATIONS 2014)

Thursday, July 18, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Giving examples, classify drugs inhibiting bacterial protein synthesis. With the help of a diagram explain bacterial protein synthesis and depict the site of action of these drugs

(4+4+2 = 10 marks)

2. With the help of a diagram explain the life cycle of malaria and indicate the site of action of different classes of anti-malarial drugs. Describe the mechanism of action of artemisinin derivatives.

(5+3+ 2 = 10 marks).

3. Giving suitable examples, classify anti-parkinsonian drugs. Explain the mechanism of action of any two classes of drugs.

(6+4 =10 marks)

4. **Short Answer Questions:**

4A. List the common toxicities of anticancer agents.
4B. With the help of a diagram, explain the mechanism of action of local anaesthetics.
4C. Describe the mechanism of action of diazepam.
4D. Explain the general methods in the management of poisoning.
4E. Write the principle of radioimmunoassay.
4F. Explain the mechanism of action of ondansetron.

(5 marks × 6 = 30 marks)

5. **Give reasons for the following:**

5A. Aspirin causes Reye-like syndrome in children.
5B. Halothane may induce malignant hyperthermia.
5C. Zidovudine and stavudine should not be combined together during anti-retroviral therapy
5D. Patients administered phenytoin should maintain oral hygiene.
5E. Folinic acid may be given after methotrexate administration during anti-cancer therapy.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2019

SUBJECT: PHARMACEUTICAL JURISPRUDENCE (PMA 406T)

(REVISED REGULATIONS 2014)

Monday, July 22, 2019

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

✍ **Answer ALL the questions.**

1. **Long Essay questions:**

1A. Who appoints Drug Inspectors? What are the qualifications and experience required for his appointment?

1B. What are the general conditions of retail sale of drugs?

(10 marks)

2A. Write a note on manufacturing of preparations containing alcohol outside the bond.

2B. Write a note on national fund for control of drug abuse.

(10 marks)

3. What is meant by legislation, regulation and guideline? Discuss recommendations made by Chopra committee towards establishing pharmaceutical legislation in India.

(10 marks)

4. **Short Essay Questions:**

4A. What are the general labeling requirement of drugs as per Drugs and Cosmetics Act?

4B. What are the requirements of GMP as per Drugs and Cosmetics Act?

4C. Write about constitution and composition of Pharmacy Council of India.

4D. What are the objectives of Drugs and Magic Remedies Act? Define Advertisement, Magic Remedy and Registered Medical Practitioner.

4E. What are the ethics a pharmacist need to observe in relation to his job and trade?

4F. What is the procedure for price fixation/revision for bulk drugs?

(5 marks × 6 = 30 marks)

5. **Give reasons:**

5A. What are distinguishing features for a design to be registered in India?

5B. What are the objectives of Medical Termination of Pregnancy Act?

5C. Define 'Coca Leaf' as per NDPS Act.

5D. What are prescription and non-prescription drugs? Give example

5E. Define Spurious drug as per Drugs and Cosmetics Act.

(2 marks × 5 = 10 marks)