

MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: MEDICINAL CHEMISTRY - II (PCH 404T)
(REVISED REGULATIONS 2014)

Tuesday, May 07, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long Answers:**

- 1A. Explain the basic phases of computer aided drug design with respective methodology involved.
- 1B. Outline the synthesis of Mephroamate, Diazepam and Phenobarbital and mention their uses.
(4+6 = 10 marks)
- 2A. Classify anticancer agents giving the structure of one agent from each class.
- 2B. Discuss the MOA of anticancer antibiotics with two structures and give the synthesis of chlorambucil.
(4+6 = 10 marks)
- 3A. Define antipsychotic drugs. Classify with one example and its structure under each class
- 3B. Explain SAR of Sulphonamides with example and structure. Write the structure and use of Eflornithine.
(4+6 = 10 marks),

4. **Short Answers:**

- 4A. Discuss the SAR of Quinolones as antibacterial agents and outline the method of synthesis of Ofloxacin.
- 4B. Classify antifungal agents with example and structure of one compound under each class. Outline the synthesis of Fluoxetine and mention its uses.
- 4C. Write the structure and uses of (i) Primaquine, (ii) Pyrimethamine, (iii) Sulbactam, (iv) Ipanoic acid.
- 4D. Explain the SAR of Phenothiazines
- 4E. What are the major drawbacks of penicillin G and how it is rectified? Explain with one structure from each class.
- 4F. Write the structure, mechanism of action and uses of (i) Metronidazole (ii) Diethyl Carbamazine
(5 marks × 6 = 30 marks)

5. **Give reasons:**

- 5A. Sodium valproate is used as broad spectrum anticonvulsant drug.
- 5B. Third generation Cephalosporins are more active against gram negative organisms.
- 5C. Secobarbital is more potent than pentobarbital.
- 5D. Epinephrine is used with local anesthetic.
- 5E. Dose must be carefully adjusted while administrating general anesthetics.
(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: CLINICAL PHARMACY AND THERAPEUTICS (PPR 401)
(CREDIT BASED SYSTEM)

Tuesday, May 07, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Explain the management of hypertension according to JNC-VII guidelines. (8 marks)
2. Explain the etiopathogenesis and management of peptic ulcer. (3+5 = 8 marks)
- 3A. Explain the clinical manifestations and the management of chronic renal failure.
- 3B. Discuss the various dosage regimen of tuberculosis. (4+4 = 8 marks)

4. **Short Essay:**

- 4A. Describe role of statins in the management of Hyperlipidemia.
- 4B. Describe the dosing of levothyroxine in hypothyroid patients.
- 4C. Explain the standard treatment regimen for uncomplicated malaria with adult doses.
- 4D. Explain the management of portal hypertension and variceal bleeding in Alcoholic liver disease patients. (4 marks × 4 = 16 marks)

5. **Short Answer:**

- 5A. Enumerate various professional activities of clinical pharmacist.
- 5B. Define adverse drug reaction and adverse drug event.
- 5C. Write the role of atypical antipsychotics in the management of schizophrenia.
- 5D. What is Troponin and write its clinical significance.
- 5E. What are pink puffer and blue bloater? (2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019

SUBJECT: PHARMACOLOGY – II (PHA 405T)
(REVISED REGULATIONS 2014)

Thursday, May 09, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Discuss the pharmacodynamics, pharmacokinetics, adverse effects, and uses of phenytoin.
(2+2+4+2 = 10 marks)
2. With suitable examples, discuss the various approaches of drug discovery programme. List the major objectives of preclinical trials. Explain any two major objectives.
(4+1+5 = 10 marks)
3. With the help of a diagram, discuss the process of bacterial protein synthesis. Explain the mechanism and site of action of antibiotics which inhibit bacterial protein synthesis.
(5+5 = 10 marks)

4. **Short answer questions:**

- 4A. With suitable examples, classify immunosuppressants. Explain the mechanism of action of mTOR inhibitor.
- 4B. With the help of a diagram, discuss the mechanism of action of local anesthetics.
- 4C. With suitable examples, classify antidepressants.
- 4D. Explain the mechanism of any two classes of drugs which reduce gastric acid secretion.
- 4E. Explain the mechanism of action of rifampicin and isoniazid.
- 4F. Classify antimalarial drugs on the basis of their clinical use.
(5 marks × 6 = 30 marks)

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

- 5A. Post antibiotic effect prolongs the duration of action of the drug.
- 5B. Second gas effect and diffusion hypoxia
- 5C. Amantadine, an antiviral drug, is not effective against Influenza B virus.
- 5D. Lamivudine and zalcitabine should not be prescribed in combination.
- 5E. What is the rationale in combining ampicillin with clavulanic acid?
(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019

SUBJECT: PHARMACOLOGY – II (PHA 405)
(CREDIT BASED SYSTEM)

Thursday, May 09, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions**

✍ **Long Essays:**

1. With the help of a diagram, explain the serotonergic regulation of peristaltic reflex and write briefly about the drugs affecting it. (8 marks)
2. Classify drugs for parkinsonism. Explain the pharmacological actions of Levodopa. (3+5 = 8 marks)
3. Write in detail about the first line drugs in the treatment of tuberculosis. (8 marks)

4. **Short essays:**

- 4A. Explain the Mechanism of action of Methotrexate. What is Citrovorum rescue?
- 4B. Describe the mechanisms of action of aminoglycosides. How do bacteria develop resistance to aminoglycosides?
- 4C. Explain the general as well as specific measures in the management of organophosphorus poisoning.
- 4D. Explain the Mechanism of action of ethosuximide. (4 marks × 4 = 16 marks)

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

- 5A. Pyrimethamine at larger doses may cause megaloblastic anaemia.
- 5B. Cimetidine increases the duration of action of benzodiazepines.
- 5C. Morphine should cautiously be given in asthmatics.
- 5D. Emetics are contraindicated in morphine poisoning.
- 5E. Lactulose, an osmotic purgative, can also be used for hepatic encephalopathy. (2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: INDUSTRIAL PHARMACY (PCE 403T)
(REVISED REGULATIONS 2014)

Saturday, May 11, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

1. Long Answer Questions:

- 1A. Mention different methods used to measure the tonicity in sterile products and explain Class-I methods of tonicity adjustment in detail. (10 marks)
- 1B. Define Nail Lacquers. Explain the formulation of Nail Lacquers with suitable formula. (10 marks)
- 1C. Write about the various excipients used in tablet formulation with examples and role of each excipient. What are the advantages of tablet as a dosage form? (any four) (8+2 = 10 marks)

2. Short answer questions:

- 2A. Briefly explain the requirements for manufacture of sterile products as per schedule M.
- 2B. With a suitable diagram write how the Tc99m is generated and used? Write on the facilities required for radiopharmaceuticals in a hospital.
- 2C. Explain any TWO quality control tests for soft gelatin capsules.
- 2D. Write a note on containers for aerosols. What are the criteria for selection of aerosol container?
- 2E. Write a brief note on microspheres (definition, types, methods for preparation)
- 2F. Briefly explain pH modification and micellar solubilization approach to improve solubility in the formulation of liquid orals. (5 marks × 6 = 30 marks)

3. Give Reasons for the Following:

- 3A. Vanishing cream is used for make up.
- 3B. Pyrogens are also called as bacterial endotoxins.
- 3C. Spray rate and spray pattern have to be controlled during film coating of tablets
- 3D. Plasticizer needs to be incorporated in soft gelatin capsule shell
- 3E. During preparation of semisolids
- i) aeration should be avoided
- ii) stainless steel steam jacketed vessels are used
- (2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: INDUSTRIAL PHARMACY (PCE 403)
(CREDIT BASED SYSTEM)

Saturday, May 11, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

1. Long Essays:

- 1A Define microencapsulation. Enlist the methods of Microencapsulation and explain any TWO method. (8 marks)
- 1B What is isotonicity? Explain how isotonicity of parenteral preparations are adjusted? (8 marks)
- 1C Describe four problems commonly encountered during tablet compression. Explain friability test and test for uniformity of content along with the limits (4+4 = 8 marks)

2. Short notes:

- 2A Explain the parts of aerosol valve system along with role of each part
- 2B Explain the formulation of Liquid shampoo with a suitable formula
- 2C Briefly explain the qualities of oleaginous type bases used in semi-solids
- 2D Classify osmotic pumps and briefly describe any ONE type of osmotic pump (4 marks × 4 = 16 marks)

3. Short answers:

- 3A List the therapeutic uses of radiopharmaceuticals
- 3B Mention any four key concepts of GMP.
- 3C Mention different types of glass used in pharmaceutical packaging with examples.
- 3D Classify different filling methods used in manufacturing of Liquid Orals.
- 3E Enlist different approaches to increase the solubility of drugs in formulating Liquid Orals. (2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: PHARMACEUTICAL ANALYSIS-2 (PQA 402T)
(REVISED REGULATIONS 2014)

Tuesday, May 14, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Define and derive the Beer-Lambert law. Classify and explain the deviations from the same.
2. What are the types of pumps used in HPLC? Explain.
3. Write a note on standard hydrogen electrode and saturated calomel electrode.

(10 marks × 3 = 30 marks)

4. **Short essay:**

- 4A. List the responsibilities of a Quality Assurance Department in Pharmaceutical manufacturing unit.
(5 marks)
- 4B. List the advantages and disadvantages of Chromatography.
(5 marks)
- 4C. With the help of neat and labelled diagram, write a note on bolometer detector employed in IR spectrophotometer.
(5 marks)
- 4D. Discuss the chemical interferences observed in AAS with the methods to overcome them.
(5 marks)
- 4E. Which internal standard is used in NMR spectroscopy? Why?
(5 marks)
- 4F. i) Discuss different types of ions produced in mass spectroscopy with appropriate example.
ii) Write any four applications of Radio Immune Assay (RIA).

(3+2 = 5 marks)

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

- 5A. List the categories of ICH guidelines?
- 5B. Classify light scattering with one example each.
- 5C. Enlist different types of quenchings observed in fluorimetry.
- 5D. Define specific optical rotation with appropriate formula.
- 5E. Enlist important applications of DSC.

(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: PHARMACEUTICAL MANAGEMENT (PMA 407)
(CREDIT BASED SYSTEM)

Tuesday, May 14, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

1. Long answer questions:

- 1A. Define motivation. Discuss any two theories of motivation.
- 1B. What are the Elements of promotional mix? Discuss all in detail.
- 1C. With specimen formats explain all types of Journals and a Ledger.

(8 marks × 3 = 24 marks)

2. Short note questions:

- 2A. What is meant by functional and dysfunctional conflict? Briefly write about methods to deal with conflict.
- 2B. Explain Trait's theory of leadership.
- 2C. What are marketing objectives and strategies for different stages of product life cycle?
- 2D. Explain law of supply and various factors, which determine supply.

(4 marks × 4 = 16 marks)

3. Short Answer Questions:

- 3A. Importance of planning.
- 3B. Define Asset and Liability.
- 3C. What are the benefits of marketing research?
- 3D. Explain in brief various types of plant layout.
- 3E. Write a note on different material handling systems.

(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: PHARMACEUTICAL JURISPRUDENCE (PMA 406T)
(REVISED REGULATIONS 2014)

Thursday, May 16, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long Essay questions:**

- 1A. What are the powers given to Drug Inspector as per Drugs and Cosmetics Act?
- 1B. What are the conditions for the sale of Sch. C, C1 drugs?

- 2A. Write a note on manufacturing of preparations containing alcohol as per Medicinal and Toilet Preparations Act.
- 2B. What are different operations and activities prohibited, controlled or regulated as per NDPS Act?

3. Discuss Education regulations according to Pharmacy Act. Write composition and functions of Pharmacy Council of India.

(10 marks × 3 = 30 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 factory and premises as per Sch. M of Drugs and Cosmetics Act?
- 4C. What are different categories of advertisements which are exempted conditionally as per Drugs and Magic Remedies Act?
- 4D. What is the procedure for approval for courses for study and examination by PCI?
- 4E. What are the ethics a pharmacist need to observe in relation to trade and medical profession?
- 4F. Describe the procedure for calculation and fixing drug prices according to DPCO 2013.

(5 marks × 6 = 30 marks)

5. **Give Reasons:**

- 5A. Briefly explain criteria to get a patent.
- 5B. Enlist any two functions of Animal Welfare Board of India.
- 5C. Define 'Coca Derivative' as per NDPS Act.
- 5D. Compare prescription and non-prescription drugs
- 5E. Define New drug as per Drugs and Cosmetics Act.

(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019

SUBJECT: PHARMACOGNOSY – III (PCO 406)
(CREDIT BASED SYSTEM)

Monday, May 20, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

- ✍ **Answer ALL the questions.**
- ✍ **Draw neat labeled diagrams wherever necessary.**

✍ **Long Essays:**

- 1A. Give the method of isolation, identification and estimation of Quinine.
- 1B. Draw the powder characters of Hyoscyamus. (6+2 = 8 marks)
- 2A. Write an essay on Tridosha theory of Ayurveda.
- 2B. Discuss the applications of HPTLC for the analysis of plant constituents. (4+4 = 8 marks)
- 3. Describe Ipecac under a suitable pharmacognostic scheme. (8 marks)

4. **Short essays:**

- 4A. Describe the diagnosis of Allergy
- 4B. Define and classify enzyme reactors. Add a note on continuous flow reactors
- 4C. Discuss Squill as a natural pesticide.
- 4D. Write a short essay on transgenic plants. (4 marks × 4 = 16 marks)

5. **Short answers:**

- 5A. Advantages of non-saccharide sweetening agents?
- 5B. Dolastatin and Bryostatins.
- 5C. Give the source, chemical constituents and uses of Coeus and Thevetia
- 5D. Classify dietary fibres and give their significance.
- 5E. Natural products in clinical use (2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: MEDICINAL CHEMISTRY – II (PCH 404)
(CREDIT BASED SYSTEM - REGULAR)

Wednesday, May 22, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. Discuss the SAR of barbiturate and hydantoin class of Antiepileptic drugs

1B. How do you determine hydrophobicity in a QSAR study?

(4+4 = 8 marks)

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

2B. Explain the SAR of Tetracyclines.

2C. Discuss the importance of beta lactamase inhibitors with an example

(3+3+2 = 8 marks)

3A. Classify non-barbiturates as sedatives and hypnotics with one structure under each class.

3B. Explain the SAR of Benzodiazepines as antianxiety agents.

(4+4 = 8 marks)

4. **Short Essays:**

4A. i) List out the characteristic features of an ideal general anesthetic.

ii) Outline the synthesis of Metronidazole and mention its uses.

(2+2 = 4 marks)

4B. Discuss the SAR of Quinolones as antibacterial agents and outline the method of synthesis of Ciprofloxacin

(2+2 = 4 marks)

4C. i) List out the important structural features of butyrophenones with two examples.

ii) Outline the synthesis of Imipramine.

(3+1 = 4 marks)

4D. Discuss the importance of DHFR inhibitors in malarial therapy with an example and give the structure of two 8-amino quinolines.

(4 marks)

5. **Short Answers:**

5A. Write the structure, MOA and uses of norfloxacin

5B. Define antiparkinsonian drugs and classify with one example from each class

5C. Why Dopamine receptors differ in sensitivity to neuroleptics drugs of various chemical classes?

5D. Why natural tetracyclines are more active than Epi-tetracyclines?

5E. Why Propofol is called Milk of Amnesia?

(2 marks × 5 = 10 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FOURTH YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019

SUBJECT: MEDICINAL CHEMISTRY – II (PCH 404)
(CREDIT BASED SYSTEM - REPEATERS)

Wednesday, May 22, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. Classify antidysrhythmic agents giving the structure of one agent under each class. Outline the synthesis of Amiodarone.

1B. Outline the synthesis of the Acyclovir with its use and mechanism of action.

(5+3 = 8 marks)

2A. Explain the MOA of DNA alkylators and give the structure of two alkylating agents.

2B. Write the structure and uses of the following:

i) Cloxacillin ii) Azithromycin iii) Sulbactam iv) Cefuroxime.

(4+4 = 8 marks)

3A. Classify AntiTB and AntiAids drugs with one example and its structure from each class. Outline the synthesis of INH.

3B. Classify Urinary tract (UT) anti-infectives with examples and its structure from each class.

* Outline the synthesis of one UT antiinfective agent

(4+4 = 8 marks)

4. **Short Essays:**

4A. Explain SAR of Thiazides as diuretics.

4B. Discuss the chemistry and SAR of amino glycoside antibiotics.

4C. Give the MOA and method of preparation of Dicoumarol

4D. Classify anti malarial agents giving the structure of one agent from each class and Outline the method of synthesis of pyrimethamine.

(4 marks × 4 = 16 marks)

5. **Short Answers:**

5A. Give the method of preparation of Clotrimazole and mention its use

5B. Outline the method of synthesis of chloramphenicol.

5C. What are pro-drugs? What is the need for designing a prodrug?

5D. Write the structure and uses of two progestins.

5E. Classify hypoglycemic agents with examples and one structure from each class.

(2 marks × 5 = 10 marks)

