



MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019

SUBJECT: PHARMACOGNOSY - 3 (PCO 306T)

(2014 REGULATIONS)

Monday, May 06, 2019 (10.00 - 13.00)

Answer ALL questions.

Marks: 70

Duration: 180 mins.

Long Answer Questions:

- 1) Describe the Source, chemical constituents, morphology and cultivation of Rauwolfia. (10)
(1+1+1+2+5 = 10 marks)
- 2) Describe Liquorice under a suitable Pharmacognostic scheme. (10)
- 3A) Give the source, active constituents and uses of Dioscorea, Quassia and Squill. (6)
- 3B) Describe the methods used for the production of Aloes. (4)

4. Short Answer Questions:

- 4A) Screening methods for Hepatoprotective activity. (5)
- 4B) Determination of Arsenic. (5)
- 4C) Section and Powder Microscopy of Cinchona. (5)
- 4D) Need for Patenting and how it is done. (5)
(1+4 = 5 marks)
- 4E) Give the construction and working principle of fluidized bed reactor. (5)
- 4F) What is suspension culture? Give a graphical representation of its growth. (5)

5. Give Reasons for the Following:

- 5A) TLC studies is significant in herbal drug standardization. (2)
- 5B) Datura differs from other Solanaceous drugs in chemistry. (2)
- 5C) Cascara bark should be stored for at least one year before use. (2)
- 5D) Spirulina is a concentrated source of food. (2)
- 5E) *Aloe vera* gel is a cosmetic. (2)

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

SUBJECT: PHARMACOGNOSY- II (PCO 306)
(CREDIT BASED SYSTEM)

Monday, May 06, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL questions.**

✍ **Draw neat labelled diagrams and structure wherever necessary.**

✍ **Long essay:**

1. Classify extraction methods and give a detailed account of percolation process.
2. What are Flavonoids? Give their chemistry. Add a descriptive note on Citrus bioflavonoids of pharmaceutical significance with examples.
3. Describe the Pharmacognosy of Cinnamon bark.

(8 marks × 3 = 24 marks)

4. **Short Essay:**

- 4A. Give the source, family, active constituents and uses of Cascara and Glycyrrhiza.
- 4B. Describe the chemistry and identification tests for Asafoetida.
- 4C. Give the biogenesis of Hyoscyamine from ornithine.
- 4D. Describe the transverse section and powder microscopy of Senna.

(4 marks × 4 = 16 marks)

5. **Short Answer:**

- 5A. Enfleurage and Ecuelle method of volatile oil extraction.
- 5B. Types and applications of NMR spectroscopy.
- 5C. Source and powdered characters of Squill.
- 5D. Keller Kiliani test and its significance.
- 5E. Autoradiography.

(2 marks × 5 = 10 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019
SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302T)
(2014 REGULATIONS)
Wednesday, May 08, 2019 (10.00 - 13.00)

Marks: 70**Duration: 180 mins.****Long Answer Questions:**

- 1) Discuss types and features of expression vectors and restriction enzymes that are used in Recombinant DNA technology. (10)
- 2) Immune system that protects our body from invasion of pathogens can be categorized into two lines or stages. State and describe the two types of immune system. (10)
- 3) Describe the production and recovery of Penicillin G. (10)

4. Short Answer Questions:

- 4A) Write a note on anticipated benefits of Pharmacogenomics. (5)
- 4B) Explain the features of anchorage dependent and independent cultures. (5)
- 4C) Explain the characteristics of embryonic and adult stem cells. (5)
- 4D) What are vaccines? Classify them with suitable examples. (5)
- 4E) Explain the principle involved in Sandwich ELISA. (5)
- 4F) What is gene therapy? Explain the strategies used for it. (5)

5. Give Reasons for the Following:

- 5A) Putrefaction is different from Fermentation. (2)
- 5B) Designing primers having unique sequence of nucleotides is important for the success of Polymerase Chain Reaction. (2)
- 5C) Phenotype is different from Genotype. (2)
- 5D) pH maintenance is critical for production of Streptokinase. (2)
- 5E) Administration of DNA vaccines can provide both humoral and cell mediated immunity. (2)

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MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019

SUBJECT: MEDICINAL CHEMISTRY - I (PCH 304T)

(2014 REGULATIONS)

Friday, May 10, 2019 (10.00 - 13.00)

Marks: 70

Duration: 180 mins.

Long Answer Questions:

- 1A) Classify anticholinergics with examples giving one structure from each class. (5)
- 1B) What are the common SAR features of Cholinergic blockers? (5)
- 2A) Write the common chemical features of ACE inhibitors. (5)
- 2B) How do you synthesise Warfarin and Phentolamine? Give chemical reactions. (5)
- 3A) What are diuretics? Classify diuretics with examples giving one structure from each class. (4)
- 3B) Discuss the SAR and therapeutic applications of loop diuretics. (4)
- 3C) Outline the synthesis of mefenamic acid. (2)

4. Short Answer Questions:

- 4A) Write the synthesis of diphenhydramine and mepyramine. (pyrilamine) (5)
- 4B) What are NSAIDs? Discuss the common structural features of NSAIDs. (5)
- 4C) Discuss the SAR of 1, 4 Dihydropyridine antianginal agents and give the synthesis of nifedipine. (5)
- 4D) Explain the SAR of sulphonyl urea as oral hypoglycemics. (3)
- i)
- ii) Write the synthesis of tolbutamide. (2)
- 4E) Explain any two theories of Drug-Receptor interactions. (5)
- 4F) Classify Antihypertensive agents giving example. Give the chemical synthesis of verapamil. (5)
(2+3 = 5 marks)

5. Give reasons for the following:

- 5A) Electron releasing substituents are preferred on the pyridine ring of proton pump inhibitors. (2)

- 5B) Administration of aryl carbamates slowdown the hydrolysis of acetylcholine by acetyl cholinesterase. (2)
- 5C) Oxymorphone is ten times more potent analgesic than morphine. (2)
- 5D) 4-hydroxy benzoic acid has high partition coefficient than salicylic acid. (2)
- 5E) EDTA is used in treating lead as well as digoxin poisoning. (2)

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MANIPAL ACADEMY OF HIGHER EDUCATION
THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2019
SUBJECT: MEDICINAL CHEMISTRY – I (PCH 304)
(CREDIT BASED SYSTEM - REGULARS)

Friday, May 10, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

- 1A. Classify antiarrhythmic agents with one structure from each class.
1B. Write the synthesis of verapamil and clofibrate. (4+4 = 8 marks)
- 2A. Discuss the important structural modifications of Morphine and their effect on analgesic activity.
2B. Give the synthesis of diclofenac. (6+2 = 8 marks)
- 3A. Define any two physicochemical properties that affect drug action.
3B. Write the chemical synthesis of Salbutamol.
3C. Write the synthesis and uses of Dicoumarol. (2+3+3 = 8 marks)

4. **Short Essays:**

- 4A. Discuss the general structural requirements of H₁-antihistamines.
4B. Write the synthesis and uses of omeprazole and nifedipine.
4C. What is organophosphorus poisoning? How pralidoxime act as an antidote? Outline the synthesis of pralidoxime.
4D. What are angiotensin receptor antagonists? Write the structure of any two drugs from this class. (4 marks × 4 = 16 marks)

5. **Short Answers:**

- 5A. Why Pseudoephedrine is much less potent than ephedrine.
5B. Compared to lovastatin and simvastatin, pravastatin has less incidence of CNS side effects and is more selective towards hepatic tissues.
5C. Give the structure and uses of two nitrovasodilators.
5D. Write the structure of two reversible acetylcholinesterase inhibitors for treatment of Alzheimer's disease.
5E. Why Carbonic anhydrase inhibition induces diuresis? (2 marks × 5 = 10 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019

SUBJECT: PHARMACOLOGY - I (PHA 305T)

(2014 REGULATIONS)

Monday, May 13, 2019 (10.00 - 13.00)

Marks: 70

Duration: 180 mins.

Long answer questions:

- 1) Discuss the factors governing volume of distribution. Explain plasma protein binding and its implications. (10)
(4+6 = 10 marks)
- 2) With a neat, labelled diagram, discuss the adrenergic transmission and drugs affecting it. (10)
- 3) Explain the synthesis of thyroid hormones. How do the antithyroid drugs interfere with this process? (10)

4. Short answer questions:

- 4A) Write the classification of antidiabetic drugs with examples. (5)
- 4B) Explain the mechanism of action of lisinopril. (5)
- 4C) Discuss the advantages and disadvantages of intravenous route of administration. (5)
- 4D) Explain the mechanism of action of warfarin. (5)
- 4E) With suitable examples, classify anti-arrhythmic drugs. (5)
- 4F) Explain the signal transducer mechanisms operating in G protein coupled receptors. (5)

5. Give reasons for the followings:

- 5A) Rivastigmine is given in Alzheimer's disease. (2)
- 5B) Adrenaline is combined with local anaesthetics. (2)
- 5C) Digoxin is of value in congestive heart failure. (2)
- 5D) Progesterone and estrogen is combined in oral contraceptive pills. (2)
- 5E) Propranolol is contraindicated in diabetes. (2)

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

SUBJECT: PHARMACOLOGY – I (PHA 305)
(CREDIT BASED SYSTEM)

Monday, May 13, 2019

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL questions.**

✍ **Long essay questions:**

1. Describe four patient-related factors and four drug-related factors that influence drug responses.

(4+4 = 8 marks)

2. Explain, with a diagram, the neurotransmission at cholinergic synapses. Describe muscarinic and nicotinic actions of acetylcholine

(4+2+2 = 8 marks)

3. Describe with the help of a diagram, the biosynthesis of thyroid hormones. Indicate the sites of action of antithyroid drugs. How is Lugol's iodine helpful in preoperative management of thyrotoxicosis?

(4+3+1 = 8 marks)

4. **Short essays:**

4A. The cardiotonic action of digitalis arises from inhibition of sarcolemmal $\text{Na}^+\text{-K}^+\text{-ATPase}$. Explain with a neat picture

4B. Where in the nephron does acetazolamide act? Describe its mechanism of diuretic action.

4C. Acidity facilitates oral iron absorption while alkalinity retards it. How?

4D. Describe the G-protein coupled mechanism of α -adrenergic receptor activation.

(4 marks \times 4 = 16 marks)

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

5A. Inhibition of LC-3KAT with drugs is useful in angina.

5B. Vasodilators synergise with β -blockers as antihypertensives.

5C. Oral contraception fails if the patient also is concurrently receiving rifampin.

5D. For the treatment of barbiturate poisoning urine is alkalinised.

5E. Anastrozole is administered to women with breast cancer

(2 marks \times 5 = 10 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019

SUBJECT: PHARMACY PRACTICE (PPR 301T)

(2014 REGULATIONS)

Wednesday, May 15, 2019 (10.00 - 13.00)

Marks: 70

Duration: 180 mins.

Long Answer Questions:

- 1) Define Pharmacy Therapeutic Company (PTC) and explain the role of PTC in drug safety and ADR reporting and monitoring. (10)
- 2) What is medication error? Enumerate various factors contributing for medication error. Explain the strategy to overcome any three factors. (10)
- 3) Define essential drug concept as per WHO and explain factors that influence use of medicines. (10)

4. Short Answer Questions:

- 4A) Explain the criteria for OTC designation. (5)
- 4B) Define readability formula and explain its advantages and disadvantages. (5)
- 4C) Explain the steps in patient counselling. (5)
- 4D) Define Hospital Pharmacy and explain various pharmaceutical services or functions rendered by the hospital pharmacists. (5)
- 4E) Explain the legal aspects of storage and storage arrangements. (5)
- 4F) Explain the selection of location for starting a community pharmacy in rural and urban area. (5)

5. Give Reasons for the following:

- 5A) Hospital formulary must always updated/constant revision is required. (2)
- 5B) Medical record is the legal document. (2)
- 5C) Safety factor is added to vendor lead time while calculating reorder quantity level. (2)
- 5D) Individual prescription order system is not useful during emergency condition. (2)
- 5E) Narcotics are stored under Lock and key. (2)

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**MANIPAL ACADEMY OF HIGHER EDUCATION**

THIRD YEAR B. PHARM. DEGREE EXAMINATION - MAY 2019
SUBJECT: PHYSICAL PHARMACEUTICS AND PHARMACOKINETICS (PCE 303T)
(2014 REGULATIONS)
Friday, May 17, 2019 (10.00 - 13.00)

Marks: 70

Duration: 180 mins.

Long Answer Questions:

- 1) Derive an expression for the determination of surface tension of a liquid by capillary rise method. (10)
- 2) Discuss the limitations of pH partition hypothesis. Explain salivary excretion of drugs. (10)
- 3) Discuss the principles of accelerated stability studies for the determination of shelf-life of drugs. Explain the solubility method of analysis for complexation. (10)

4. Short Answer Questions:

- 4A) Differentiate between microscopic and sieving method of particle size analysis. (5)
- 4B) Write the salient features of Association colloids. (5)
- 4C) Explain the application of sigma-minus method to determine the pharmacokinetics of drug in urine administered by IV bolus assuming that it follows one compartment open model. (5)
- 4D) Explain mammillary compartment model. (5)
- 4E) Explain the single dose plasma level study to measure bioavailability. (5)
- 4F) Explain the Noye's - Whitney equation with its modifications. (5)

5. Give Reasons for the Following:

- 5A) Plug flow is not observed in cone and plate viscometer. Why? (2)
- 5B) The term 'apparent viscosity' is used to describe non-Newtonian fluids. Why? (2)
- 5C) Why crossover design is preferable over a parallel design for a bioequivalence study? (2)
- 5D) Why molecularity can be different from order for the same reaction? (2)
- 5E) Why stable meta stable polymorph of the drug is preferred over stable and unstable polymorph? (2)

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