Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHARMACY PRACTICE (PPR 301T)

(REVISED REGULATIONS 2014)

Wednesday, July 18, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. What is community pharmacy? Discuss Schedule N requirement to start a community Pharmacy.

2. Define patient counselling. Explain the various barriers involved in patient counselling and strategies to overcome the same.

3. What is hospital formulary and Formulary system? Explain the guidelines to adapt/follow the hospital formulary system in the hospital.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

4A. Explain quality criteria for written patient information.
4B. Explain the goals for selection of drug therapy.
4C. Classify adverse drug reactions as per wills and brown.
4D. Write a short note on Over The Counter (OTC) Drugs
4E. What is Central Sterile Supply Room (CSSR). Explain the objectives and functions of CSSR
4F. Define unit dose. Explain the procedure for unit dose drug distribution system.

(5 marks × 6 = 30 marks)

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

5A. TDM is require for a narrow therapeutic index drugs.
5B. Provision of "Alert cards" to patients is important after severe Adverse drug reactions.
5C. No safety stock or low safety stock is required for A Item.
5D. Chances of medication error more in complete floor stock drug distribution system.
5E. Use of nursing supervisor is not good method of dispensing during off hours.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302T)

(REVISED REGULATIONS 2014)

Friday, July 20, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Explain the production of a vaccine using recombinant DNA technology.
2. Describe the cells involved in natural immunity. Compare (a) natural and adaptive immune responses, and (b) active and passive immunity.
3. Explain the production of Streptokinase.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

4A. Differentiate between Pharmacogenomics and Pharmacogenetics. Explain the importance of Pharmacogenomics in therapeutics.

4B. Explain the type of substrates that can be used for culturing anchorage dependent cells.

4C. Stem cells are considered as special cells that are un-specialized, having capacity for self-renewal and differentiation. Explain the terms (a) un-specialized cells (b) self-renewal and (c) differentiation.

4D. What is a vaccine? What are ideal characteristics of a vaccine? Classify vaccines with examples.

4E. Explain the production of tetanus vaccine.

4F. What are DNA vaccines? Explain.

(5 marks × 6 = 30 marks)

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

5A. Modern biotechnology is different from traditional biotechnology.

5B. Isolating the gene to be cloned directly from live cells is a tough task.

5C. Medium plays a role in detection of phenotypic characters.

5D. With the same yeast the fermented products changed with operating conditions.

5E. Using CRISPR Cas9 system to edit the gene is more advantageous than using restriction enzymes.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY/AUGUST 2018

SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302)

(CREDIT BASED SYSTEM)

Friday, July 20, 2018

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

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

Long essay questions:

1. Describe the production and recovery of Penicillin G.

2. Discuss the process of gene transfer in bacteria by conjugation and transduction.

3. Explain the construction, working and application of a rotary continuous filter with the help of a neat labelled diagram.

(8 marks × 3 = 24 marks)

4. **Short essay questions:**

4A. With suitable examples, explain anchorage independent cells.

4B. Explain the production of Rabies vaccine.

4C. Write the precautions to be taken during the processing and usage of 'Dried Human Serum' preparation.

4D. What is Darcy's Law of filtration? Write a note on usage of filter aid.

(4 marks × 4 = 16 marks)

5. **Short answer questions:**

5A. Define screening. Differentiate between primary and secondary screening.

5B. Write the difference between Putrefaction and Fermentation.

5C. What are expression vectors? Give an example.

5D. Mention any two ideal characteristics of test organism used in microbial assay of antibiotics.

5E. Write any one advantage and limitation for using Aluminium as a material of plant construction.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHYSICAL PHARMACEUTICS AND PHARMACOKINETICS (PCE 303T)

(REVISED REGULATIONS 2014)

Tuesday, July 24, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Explain the effect of polymorphism of drugs on their absorption. Discuss biliary excretion of drugs.

2. Define true density and explain the methods to determine the same.

3. Explain any two methods for the determination of order of reaction. Discuss the distribution method for the analysis of complexes.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

4A. Explain the pharmacokinetics of drug in blood administered by IV bolus assuming that it follows one compartment open model.

4B. Discuss compartmental modelling of drugs.

4C. Explain solid solution and solid dispersion methods to enhance bioavailability of drugs.

4D. Explain an official method of dissolution testing as per IP.

4E. Discuss the behaviour of surfactants in aqueous solution.

4F. Describe the reasons for instability of lyophilic colloids.

(5 marks × 6 = 30 marks)

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

5A. Why does the same reaction can follow different molecularity and order?

5B. Why the extent of absorption of some hydrophobic drugs can decrease with the decrease in their particle size?

5C. Why healthy human volunteers are preferred over patients for a bioequivalence study?

5D. Viscosity of pseudoplastic system cannot be expressed by a single value. Why?

5E. Newtonian systems do not exhibit thixotropy. Why?

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHYSICAL PHARMACEUTICS AND BIOPHARMACEUTICS (PCE 303)

(CREDIT BASED SYSTEM)

Tuesday, July 24, 2018

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

✍ **Answer ALL the questions.**

1. **Long Essays:**

1A. Derive an expression for the determination of surface tension of a liquid by capillary rise method.

1B. What are the limitations of pH partition hypothesis? Explain biliary excretion of drugs.

1C. Derive equations for the determination of half-life and shelf-life for a zero order reaction. Explain the solubility method of analysis for complexation.

(8 marks × 3 = 24 marks)

2. **Short notes:**

2A. Discuss sieving method of particle size analysis.

2B. Write the salient features of Association colloids.

2C. Explain the single dose plasma level study to measure bioavailability.

2D. Describe any one method of dissolution testing of drug products.

(4 marks × 4 = 16 marks)

3. **Short answers:**

3A. Write about coalescence of emulsions.

3B. Mention any two characteristic features of flocculated suspensions.

3C. Write any two significant features of protein binding of drugs.

3D. Discuss any one method to improve bioavailability of drugs.

3E. Define bioequivalence and pharmaceutical equivalence.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: MEDICINAL CHEMISTRY - I (PCH 304T)

(REVISED REGULATIONS 2014)

Thursday, July 26, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1A. What are the common structural features required for NSAIDs? How will you synthesise diclofenac and acetaminophen?

1B. What are narcotic antagonists? Give the structure of any two.

(8+2 = 10 marks)

2A. What are proton pump inhibitors? Write the synthesis and uses of omeprazole.

2B. Outline the synthesis of Mepyramine and Meclizine.

(6+4 = 10 marks)

3A. Writing the basic structure, explain the important chemical features of sympathomimetic drugs.

3B. Define and explain the importance of co-valent bond and lipophilic bond in drug receptor interaction.

(6+4 = 10 marks)

4. **Short answer questions:**

4A. Discuss of SAR of thiazide diuretics and give the synthesis of acetazolamide.

(5 marks)

4B. Name three different chemical types of calcium channel blockers used as antihypertensive agents. Write the structure of any two calcium channel blockers.

(5 marks)

4C. i) Classify oral hypoglycaemics with examples giving one structure from each class.

ii) Give the structure of any two anticholinergic agents which is used for the treatment of urinary incontinence.

(3+2 = 5 marks)

4D. i) How do you synthesise diltiazem?

ii) Define the given terms: a) pKa b) Chelation

(3+2 = 5 marks)

4E. Explain the SAR of cholinergic agonists.

(5 marks)

4F. i) Write the synthesis of testosterone and give the therapeutic uses of anabolic androgenic steroids.

ii) Write the structure of any two HMG-CoA-reductase Inhibitor.

(4+1 = 5 marks)

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

5A. Ethacrynic acid binds to the ion transport system of renal tubules.

5B. d-tubocurarine is a neuromuscular blocking agent (Nicotinic Antagonist).

5C. Cetirizine is less sedating among cyclizines as H_1 antihistamines.

5D. Terbutaline is resistant to enzyme COMT.

5E. Propranolol is more lipophilic than atenolol.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY/AUGUST 2018

SUBJECT: MEDICINAL CHEMISTRY – I (PCH 304)

(CREDIT BASED SYSTEM - REGULARS)

Thursday, July 26, 2018

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

✍ **Answer ALL the questions.**

✍ **Long Essay Questions:**

1A. What are diuretic? Classify diuretics with examples giving one structure from each class.
1B. Discuss the SAR features of carbonic anhydrase inhibitors.

(4+4 = 8 marks)

2A. Discuss the various structural modifications of acetylcholine and their effect on cholinergic agonist activity. Discuss the SAR of cholinergic agonist.
2B. Give the synthesis of pralidoxime

(6+2 = 8 marks)

3A. How do you synthesise salbutamol and Clonidine?
3B. What is the importance of studying solubility and partition coefficient of drugs in medicinal chemistry?

(4+4 = 8 marks)

4. **Short Essay Questions:**

4A. Discuss the SAR of 1, 4 Dihydropyridines as antianginal agents and give the synthesis of nifedipine.

(4 marks)

4B. Outline the synthesis of Ibuprofen and Diclofenac.

(2+2 = 4 marks)

4C. What are irreversible alpha blockers? Giving an example write the chemical mechanism of action.

(4 marks)

4D. What are proton pump inhibitors? Write the synthesis and uses omeprazole.

(4 marks)

5. **Short Answer Questions:**

5A. Why glibencamide a second-generation sulphonyl urea oral hypoglycaemic agent is 200 times more potent than 1st generation tolbutamide.
5B. What structural feature of Flurbiprofen makes it 25 times more potent than Ibuprofen.
5C. Why Nitrogen containing ring in ACE inhibitors must contain a carboxylic acid?
5D. Justify the use of hydralazines in the treatment of hypertension.
5E. How Candesartan is useful in treating hypertension?

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY/AUGUST 2018

SUBJECT: MEDICINAL CHEMISTRY – I (PCH 304)
(CREDIT BASED SYSTEM - REPEATERS)

Thursday, July 26, 2018

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

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. Explain with suitable examples, optical and geometrical isomerism in relation to biological action.

1B. Discuss the forces involved in drug-receptor interactions.

(4+4 = 8 marks)

2A. What are the qualities of an ideal local anesthetic? Mention the therapeutic applications of local anesthetics.

2B. Explain the structural modifications that were attempted in morphine and their effect on analgesic activity.

(4+4 = 8 marks)

3A. Enlist the major biological effects of sympathetic drugs. How do you synthesize propranolol?

3B. Write the synthesis of clidinium bromide and dicyclomine.

(4+4 = 8 marks)

4. **Short Essays:**

4A. Explain with suitable examples, the oxidative biotransformation of aromatic moieties, benzylic carbon atom and carbon involving hetero atom.

(4 marks)

4B. i) Outline the synthesis of Phenobarbital.
ii) Write the structure, synthesis and use of any one benzodiazepine derivative.

(2+2 = 4 marks)

4C. Give the synthesis, IUPAC name mechanism of action and use of Acetaminophen.

(2+1+1 = 4 marks)

4D. i) Classify non-steroidal anti-inflammatory agents giving one example for each class
ii) Outline the synthesis of Triprolidine.

(2+2 = 4 marks)

5. **Short Answers:**

5A. Outline the synthesis and mention the use of Glutethimide.

5B. Write the structure and use of Methocarbamol and Baclofen.

5C. Discuss the SAR of phenothiazine class of antihistaminics

5D. Give the important clinical uses of carbachol and benzatropine.

5E. How do you synthesize diphenyl hydantoin?

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHARMACOLOGY -I (PHA 305T)

(REVISED REGULATIONS 2014)

Saturday, July 28, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. With a neat diagram, describe the adrenergic neuro-transmission and list the different classes of drugs affecting it.

(6+4 = 10 marks)

2. With the help of a diagram, explain signal transduction by G-protein coupled receptors.

(10 marks)

3. Explain the pharmacological actions and toxic effects of corticosteroids.

(10 marks)

4. **Short answer questions:**

4A. Explain the mechanism of action of erythropoietin.

4B. With the help of a diagram, explain the mechanism of action of sulfonylureas.

4C. Describe the mechanism of action of acetazolamide.

4D. Explain the mechanism of action of amiodarone.

4E. Describe the mechanism of action of anticholinesterases. Enumerate their therapeutic uses.

4F. Explain how nitroglycerine produces vasodilation.

(5 marks × 6 = 30 marks)

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

5A. Aspirin can aggravate asthma.

5B. Methyl xanthines as antiasthmatics.

5C. Frusemide should be cautiously used in patients receiving digoxin.

5D. Heparin causes lipaemia clearing in-vivo.

5E. For motion sickness, promethazine is effective only if it is taken 1hour before journey.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY/AUGUST 2018

SUBJECT: PHARMACOLOGY – I (PHA 305)

(CREDIT BASED SYSTEM)

Saturday, July 28, 2018

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

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Describe the biotransformation of drugs with examples. Explain the factors affecting drug metabolism.

(4+4 = 8 marks)

2. Taking atropine as the prototype, describe the pharmacology of antimuscarinic drugs. List their therapeutic uses.

(5+3 =8 marks)

3. Explain the genesis of cardiac arrhythmias. Describe the differential effects on cardiac action potential caused by Class 1A, 1B and 1C drugs. What are the adverse effects of quinidine?

(4+3+1 = 8 marks)

4. **Short Essay:**

4A. Describe the signal transduction mechanism of β-adrenergic receptor activation.

4B. Frusemide produces potent diuresis. Explain the mechanism of action and reasons for high potency.

4C. Describe the mechanism of action of oral anti-coagulants, using appropriate diagram.

4D. Calcium channel antagonists can act as antihypertensive drugs. Justify your answer.

(4 marks × 4 = 16 marks)

5. **Short Answers:**

5A. A biphasic blood pressure response is not produced by noradrenaline, unlike adrenaline.

5B. Cetrizine is preferred to diphenhydramine for use as an antiallergic in a bus driver.

5C. Potassium supplementation reduces the toxicity of digitalis.

5D. An inhaled steroid (beclomethasone) is a better choice for asthma than an oral one (prednisolone).

5E. Propylthiouracil and not methimazole is the drug of choice for a hyperthyroid mother, who recently gave birth to a baby.

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2018

SUBJECT: PHARMACOGNOSY - 3 (PCO 306T)

(REVISED REGULATIONS 2014)

Tuesday, July 31, 2018

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Source, chemical constituents and uses of Ephedra, Pilocarpus and Hyoscyamus.

(3+3+4 = 10 marks)

2. Describe Senna under a suitable Pharmacognostic scheme.

(10 marks)

3. What are glycosides? Give their chemistry, properties, classification and method of extraction.

(1+3+2+2+2 = 10 marks)

4. **Short answer questions:**

4A. Isolation, identification and estimation of Digitoxin.

(5 marks)

4B. Moisture content determination methods with significance.

(5 marks)

4C. Morphology of Vasaka and Kurchi with neat labelled diagram.

(2½ marks × 2 = 5 marks)

4D. Safety requirements for four categories of herbal medicines as per WHO.

(5 marks)

4E. What is Protoplast? Explain methods of its isolation.

(5 marks)

4F. Enlist the different types of enzyme reactors. Compare and contrast between Stirred tank and Fluidized bed reactor.

(5 marks)

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

5A. Acid insoluble ash is higher for Fox glove leaves.

5B. Fresh berries of pepper is blanched.

5C. Aloes is an anthracene glycoside, but do not answers Borntragers test.

5D. Mandelonitrile derivatives are used as sedative in cough remedies and flavouring agent.

5E. Dietary fibres are nutraceuticals.

(2 marks × 5 = 10 marks)