

MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: HOSPITAL AND COMMUNITY PHARMACY (PPR 301)
(MAHE SYLLABUS)**

Monday, May 04, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 75

Answer all the questions.**SECTION – A**

1. Define pharmacy and therapeutics committee. Explain its objectives, composition and operation.
(2+3+2+3 = 10 marks)
2. Define communication skill and discuss about various communication skills required for a pharmacist.
(10 marks)
3. Enumerate the various drug distribution systems to inpatients. Explain any three with their advantages.
(1+9 = 10 marks)
4. Define hospital and explain the organization of a hospital.
(2+8 = 10 marks)

SECTION – B

5. Draw and explain the activity chart of a hospital pharmacy.
6. Write briefly on OTC drugs.
7. Explain the lay out and functions of a community pharmacy.
8. Explain the “setting of various levels and perpetual inventory system” used in control of inventory.
9. Explain the code of ethics for a pharmacist in relation to his profession and medical profession.
10. Explain applications of computers in hospital pharmacy.
11. Explain the various quality control tests conducted for sterile products.
(5×7 = 35 marks)



MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: HOSPITAL AND COMMUNITY PHARMACY (PPR 301) (CREDIT BASED SYSTEM)

Monday, May 04, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ Long Essay:

1. Discuss the factors contributing to the medication errors and strategies to overcome the same.
(4+4 = 8 marks)
2. What is unit dose and explain unit dose drug distribution system with its advantages?
(2+6 = 8 marks)
3. Define hospital pharmacy and explain the organization of hospital pharmacy in a large hospital.
(2+6 = 8 marks)

4. Short Essay:

- 4A. Explain the procedure followed in cases of waste destruction and contamination of Narcotics in the hospital.
- 4B. What is patient counseling and explain its benefits.
- 4C. Describe the records to be maintained in the community pharmacy.
- 4D. Write a note on patient information leaflet.
(4×4 = 16 marks)

5. Short Answers:

- 5A. What is an essential drug list?
- 5B. Define OTC drugs and prescription drugs.
- 5C. List out the difference between hospital formulary and drug list.
- 5D. Mention the types of prescription received in outpatient pharmacy.
- 5E. Give the formula for calculating Economic Order Quantity.
(2×5 = 10 marks)



MANIPAL UNIVERSITY
THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302)
(MAHE SYLLABUS)

Wednesday, May 06, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 75

Answer all questions.

SECTION – A

1. Write down the procedure to isolate an antibiotic producing organism from soil.
2. Explain the desirable features of plasmids used in recombinant DNA technology.
3. Write short note on restrictive endonucleases.
4. Write a note on different media used in Animal Tissue Culture.
5. Write short note on 'Dried Human Plasma I.P.
6. Briefly outline the bio-assay of ACTH.
7. Write the procedure to construct standard plot for an antibiotic by microbiological assay (agar diffusion method).

(5×7 = 35 marks)

SECTION – B

8. Discuss the production of penicillin by fermentation process.
9. Discuss the production and standardization of cholera vaccine.
10. Discuss with relevant examples, the process of selection of a suitable source for extraction of enzymes.
11. With a neat sketch, describe the construction and operation of Chamber Filter Press.

(10×4 = 40 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302)
(CREDIT BASED SYSTEM)**

Wednesday, May 06, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Long essays:**

1. Discuss the production and purification of Streptokinase by fermentation.
2. Discuss Recombinant DNA technology with reference to steps in sequence for the production of recombinant protein and methods to produce the target gene.
3. Compare and contrast Packed Bed Reactor with Continuous Stirred Tank Reactor, emphasizing on the salient features with regard to design and operation.

(8×3 = 24 marks)

4. **Short essays:**

- 4A. Write briefly about the various applications of monoclonal antibodies.
- 4B. What are the differences between Salk and Sabin Polio Vaccines and which one is preferable?
- 4C. Outline the procedure for estimating antidiuretic activity of Vasopressin.
- 4D. Draw a neat labeled sketch of Rotocel Extractor and explain its working principle.

(4×4 = 16 marks)

5. **Short Answers:**

- 5A. Enlist any four differences between primary screening and secondary screening.
- 5B. In gene transfer among bacteria, what is the difference between Conjugation and Transformation?
- 5C. In microbial assays of antibiotics, what are the factors influencing the diameter of zone of inhibition?
- 5D. Enlist various types of iron used as material of construction.
- 5E. Whole Human Blood cannot be sterilized by either autoclaving or filtration. Why?

(2×5 = 10 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: MEDICINAL CHEMISTRY – I (PCH 304)
(MAHE SYLLABUS)**

Monday, May 11, 2009

Time : 10.00-13.00 Hrs.

Max. Marks: 75

✍ **Answer all the questions. Your answers should be specific to the questions asked.**

✍ **Write structures and chemical names wherever necessary.**

✍ **Long Essays:**

1A. Outline the synthesis and use of i) Chlorphenesin ii) Carbachol

1B. Give the structure and use of the following compounds:

i) Cyproheptadine ii) Antazoline iii) Cyclizine

iv) Ranitidine v) Methacholine vi) Dipyrone

1C. Write the SAR of benzodiazepines. Give the synthesis of Chlordiazepoxide.

(3+3+4 = 10 marks)

2A. What are cholinergic agents? Name any four acetylcholine analogs giving their structures and uses. Outline the synthesis of Pyridostigmine.

2B. Classify anti-inflammatory agents with examples. Mention their mechanism of action. Discuss aryl acetic acid derivatives.

(5+5 = 10 marks)

3A. What is the influence of chelation, hydrogen bonding and surface activity on biological action of drugs?

3B. What are inducers and inhibitors of drug metabolism? Enumerate the significance of drug Metabolism in Medicinal chemistry.

(6+4 = 10 marks)

4. What are β -adrenergic receptor agonists? Elucidate the structure of Ephedrine. Add a note on stereochemistry of Ephedrine.

(10 marks)

✍ **Short Essays:**

5. What are inhalation and dissociative anaesthetics? Give one example with structure. Outline the synthesis of Halothane and Methoxyflurane.

6. What are anti-epileptic drugs? Explain their mechanism of action. Write the synthesis of Carbamazepine.

7. What are Sympathomimetic agents? Classify them with one example and structure. Give the synthesis of Naphazoline.

8. What are Cholinergic blocking agents? Give the synthesis of Dicyclomine, Tropicamide and Clinidium Bromide.

9. What are local anaesthetics? Explain their mechanism of action. Outline the synthesis of Benzocaine and Dibucaine.

10. Discuss Morphine and its modifications and the changes in activity.

11. Explain the biosynthesis of Eicosanoids and designing of drugs of Eicosanoid class.

(5×7 = 35 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: MEDICINAL CHEMISTRY – I (PCH 304)
(CREDIT BASED SYSTEM)**

Monday, May 11, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ Write structures wherever necessary.**✍ Long essays:**

- 1A. Explain the important structural features of direct acting sympathomimetic agents with examples. Give the synthesis of any one of them.
- 1B. Define general anesthetics. Outline the method of preparation of one halogenated and one ultra short acting barbiturate general anesthetics.

(4+4 = 8 marks)

- 2A. What are anti-inflammatory agents? Classify them with examples. Outline the synthesis of Diclofenac Sodium and Dipyron.
- 2B. Explain various modifications of pethidine.

(5+3 = 8 marks)

- 3A. Give the structure, chemical name, synthesis and uses of
i) Dicyclomine ii) Tropicamide

- 3B. Describe the significance of pK_a value, solubility and optical isomerism on biological activity of a drug.

(3+5 = 8 marks)

✍ Short essays:

- 4A. Explain oxidative biotransformations giving two examples for each type.
- 4B. What are local anesthetics? Classify with two structures under each class. Outline the method of synthesis of procaine.
- 4C. Classify antihistamines giving two examples for each class with structures. Outline the synthesis of Antazoline.
- 4D. What are Sedatives and Hypnotics? Classify them with examples. Outline the synthesis of Diazepam and Glutethimide.

(4×4 = 16 marks)

✍ Short Answers:

- 5A. Give the structures and uses of Naphazoline and propranolol.
- 5B. Explain the mechanism of action and synthesis of Trimethadione.
- 5C. Write two examples each for reversible and irreversible cholinesterase inhibitors with structures.
- 5D. Explain briefly the biosynthesis of prostaglandins.
- 5E. Outline the synthesis of carbachol and mention its uses.

(2×5 = 10 marks)



MANIPAL UNIVERSITY
THIRD YEAR B. PHARM. DEGREE EXAMINATIONS – MAY 2009
SUBJECT: MEDICINAL CHEMISTRY – I
(RGUHS SYLLABUS)
 Monday, May 11, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 80

☞ **Your answers should be specific to the questions. Write the structures neatly.**

1. Long Essays (Answer any TWO):

- 1A. What are anxiolytic agents? Discuss the SAR of Benzodiazepines with examples. Give the mechanism of action and synthesis of Alprazolam (OR) Diazepam.
- 1B. i) Classify synthetic cholinergic blocking agents with examples. Discuss their SAR.
 ii) Write a note on any two classes of drugs giving their structure, chemical name and uses.
 iii) Outline the synthesis of Tropicamide (OR) Dicyclomine.
- 1C. i) Discuss the development of cimetidine as anti ulcer drug.
 ii) Discuss the phase I reactions of drug metabolism giving suitable examples.

(10×2 = 20 marks)

2. Short Essays. (Answer any EIGHT)

- 2A. Classify anti convulsants with examples. Write the mechanism of action and synthesis of one hydantoin agent.
- 2B. Write a note on Directly acting Sympathomimetic agents.
- 2C. Give the classification of adrenergic blocking agents with examples. Write the uses and synthesis of Metoprolol (OR) phenoxybenzamine.
- 2D. Write a note on Narcotic antagonists.
- 2E. Classify Non steroidal anti inflammatory agents with examples. Give their mechanism of action. Outline the steps involved in the synthesis of Mefenamic acid and Naproxen.
- 2F. What are H₁ antagonists? Classify them with examples. Mention their general uses. Outline the synthesis of pheniramine maleate and promethazine.
- 2G. Explain the mechanism of action and SAR of Local anesthetics. Write a note on Amino benzoic acid derivatives.
- 2H. Describe various modifications of Morphine.
- 2I. Write a note on biosynthesis, biological actions and different derivatives of Acetylcholine.
- 2J. Explain how i) Solubility ii) Hydrogen banding iii) Isomerism Influence the biological activity of a drug molecule.

(5×8 = 40 marks)

3. Short Answer: (Answer all questions)

- 3A. Name one Ultra Short acting barbiturate and one dissociative anesthetic with their structures.
- 3B. Outline the general route of synthesis of Barbiturates.
- 3C. Give the structure, use and brand names of Methaqualone and Halothane.
- 3D. Write the names and structures of two drugs used in spasticity.
- 3E. Name any Four solanaceons alkaloids giving their structure and use.
- 3F. Write any two anti tussives giving their structure and mechanism of action.
- 3G. Write any two pethidine analogs giving their structure and use.
- 3H. Outline the synthesis of phenyl butazone.
- 3I. Write the biosynthesis and uses of prostaglandins.
- 3J. Give the structure and use of Antazoline and phenindamine.

(2×10 = 20 marks)



MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHYSICAL PHARMACEUTICS AND BIOPHARMACEUTICS (PCE 303) (CREDIT BASED SYSTEM)

Wednesday, May 13, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ **Answer all questions.**

✍ **Draw neat labeled diagrams wherever necessary.**

✍ **Long Essays:**

1. Define 'Physical stability' of a suspension. Discuss the parameters used in the evaluation of the physical stability of suspension.
2. What type of viscometers are necessary for the study of Non-Newtonian systems and why? Give the working principle of any such viscometer.
3. Enumerate the factors influencing gastrointestinal absorption of drugs and explain the effect of gastric emptying on the oral absorption of drugs.

(8×3 = 24 marks)

✍ **Short Essays:**

- 4A. What are apparent zero order and pseudo first order reactions? Give an example for each class of reactions.
- 4B. Define colloids and mention the different properties of colloids.
- 4C. Mention different fundamental and derived properties of powders and give the applications of micromeritics in pharmacy.
- 4D. Why is distribution of a drug not uniform throughout the body? List the factors influencing drug distribution.

(4×4 = 16 marks)

✍ **Short Answers:**

- 5A. What is 'Phase inversion' in emulsion?
- 5B. Define complexation and classify inclusion complexes.
- 5C. Mention the factors influencing passive reabsorption of drugs from tubules.
- 5D. What are the physiologic fluid compartments of the body?
- 5E. Draw and label an electrical double layer.

(2×5 = 10 marks)



MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

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

Friday, May 15, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Long Essays:**

1. Classify antithrombotics with examples. Explain the mechanism of action and clinical uses of antiplatelet drugs.

(4+4 = 8 marks)

2. Explain any eight factors that modify drug effects, giving relevant examples.

(8 marks)

3. Discuss the physiological and pharmacological regulations of lipoproteins. List out the adverse effects of statins.

(6+2 = 8 marks)

✍ **Short Essays:**

4A. Describe the pharmacological actions of atropine on smooth muscles and secretions.

4B. Explain the mechanisms of drug actions through enzymes.

4C. Make a short note on sildenafil.

4D. What are the difference between propylthiouracil and carbimazole?

(4×4 = 16 marks)

✍ **Short Answers:**

5A. Mast cell stabilizers.

5B. Describe any two therapeutic uses of skeletal muscle relaxant.

5C. State the two uses of high ceiling diuretics.

5D. Name some calcium preparation used in the treatment of hypocalcaemia.

5E. What are the absolute contraindications to the use of androgens?

(2×5 = 10 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: PHARMACOLOGY
(RGUHS SYLLABUS)**

Friday, May 15, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 80

1. Long Essays: (Answer any TWO)

- 1A. Describe the general mechanism of action of non steroidal anti- inflammatory drugs. Discuss paracetamol toxicity and its management. (4+3+3 = 10 marks)
- 1B. Describe the pathophysiology of angina pectoris. Describe the mechanisms of actions of drugs used for the treatment of angina. List their side effects. (3+5+2 = 10 marks)
- 1C. Define sedatives and hypnotics. Classify those giving examples. Discuss the mechanism of action of barbiturates (2+4+4 = 10 marks)

2. Short Essays: (Answer any EIGHT)

- 2A. Outline the hypolipidaemic actions of niacin. Mention its toxicities.
- 2B. Describe any five pathological states that affect drug action.
- 2C. Write a note on carbonic- anhydrase inhibitors.
- 2D. Discuss the mechanism of action of local anaesthetics.
- 2E. Compare and contrast aspirin with paracetamol.
- 2F. Discuss the effects of beta receptor agonists on CVS and metabolism.
- 2G. Explain the significance of plasma protein binding of drugs.
- 2H. Enumerate the mechanisms of actions of drugs acting on RAS.
- 2I. Discuss the mechanism of drug action through receptors.
- 2J. Outline the merits and demerits of IV route. (5×8 = 40 marks)

3. Short Answers: (Answer ALL)

- 3A. Neostigmine is preferred physostigmine in myasthenia gravis. Give reasons.
- 3B. Define competitive and non-competitive enzyme inhibition. Give examples.
- 3C. What is the role of pralidoxime in organophosphorus poisoning?
- 3D. List the contraindications of digoxin.
- 3E. Explain the use of trimethaphan in the management of hypertension.
- 3F. Define agonist and antagonist with an example each.
- 3G. Give the rationale for the use of tacrine in Alzheimer's disease.
- 3H. Use of folic acid in anaemia.
- 3I. Define therapeutic index of a drug. Mention its importance.
- 3J. Biphasic response of adrenaline on blood pressure. (2×10 = 20 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: PHARMACOGNOSY- II (PCO 306)
(CREDIT BASED SYSTEM)**

Monday, May 18, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ **Answer all questions.**

✍ **Draw neat labeled diagrams and structures wherever necessary.**

✍ **Long Essays:**

1. Describe the source, method of preparation, chemical nature, chemical tests and uses of Asafoetida.
2. Describe the biogenesis of Digitoxin from Acetyl CoA via Squalene.
3. Describe the Pharmacognosy of Cardamom.

(8×3 = 24 marks)

✍ **Short Essay:**

- 4A. Write a brief essay on Flavonoids.
- 4B. List out and differentiate the adulterants and substitutes of *Digitalis purpurea*.
- 4C. What are Cyanogenetic glycosides? How are they tested? Give the botanical source, active constituents and uses of Wild cherry bark.
- 4D. Give an account of Gas Liquid chromatography and its applications in phytochemistry.

(4×4 = 16 marks)

✍ **Short Answer:**

- 5A. Give the source, constituents and uses of *Ammi majus*.
- 5B. Write a short note on Molecular sieves.
- 5C. Enlist the advantages of TLC over paper chromatography.
- 5D. List the adulterants of Clove.
- 5E. Describe the morphology of Fennel.

(2×5 = 10 marks)



MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHARMACOGNOSY AND PHYTOCHEMISTRY

(RGUHS SYLLABUS)

Monday, May 18, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 80

✍ Answer should be specific.

✍ Draw structures and neat labeled diagrams wherever necessary.

1. Long essays (Answer any TWO):

- 1A. Write an essay on Chemical method of evaluation of natural products.
- 1B. Give a detailed account of Opium.
- 1C. Enumerate the source morphology, active principles and uses of Ginseng and Glycyrrhiza.

(10×2 = 20 marks)

2. Write short essay on any EIGHT of the following:

- 2A. Classification and extraction of Resins.
- 2B. Powder characters of Clove and Rauwolfia.
- 2C. Administration of precursors in the elucidation of biogenetic pathway.
- 2D. Lactones and Bitter glycosides.
- 2E. Super critical fluid extraction method.
- 2F. Isoprenoid pathway.
- 2G. Source, chemistry and uses of Hyocyamus and Ephedra.
- 2H. Microscopy and powder study of Cinchona.
- 2I. Morphology, constituents and uses of Strophanthus.
- 2J. Give the source and constituents of Ipecac and Tea.

(5×8 = 40 marks)

3. Write the short answers on the following:

- 3A. Leaf constants.
- 3B. Partition chromatography.
- 3C. Haemolytic index and Foam index.
- 3D. Wild cherry bark.
- 3E. Constituents and uses of Vinca.
- 3F. Nutgall.
- 3G. Cremocarp.
- 3H. Differences between Jamaican and Surinam Quassia.
- 3I. Morphology of Ephedra.
- 3J. Gambier catechu.

(2×10 = 20 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009****SUBJECT: PHARMACOGNOSY – II (PCO 306)
(MAHE SYLLABUS)**

Monday, May 18, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 75

- ✍ **Answer all questions.**
✍ **Draw well labeled diagrams wherever necessary.**

SECTION – A✍ **Short Essays:**

1. Give the biogenesis of Papaverine.
2. What are Lactone glycosides? Describe the source, morphology, constituents and uses of Bavchi.
3. Explain the Isoprenoid pathway and give its significance.
4. Describe the morphology of Nutmeg and Clove.
5. Explain the qualitative identity tests for Cardiac glycosides.
6. Give an account of hydro distillation method of Volatile oil extraction.
7. Give the cultivation, collection and post harvest care of Digitalis.

(5×7 = 35 marks)

SECTION – B✍ **Long Essays:**

8. What are Glycosides? Give the classification, chemistry, isolation and estimation.
9. Describe the physical and chemical methods of analysis of Essential oils.
10. Give an account of spectroscopic methods used for the evaluation of phytoconstituents.
11. Describe the pharmacognosy of Podophyllum.

(10×4 = 40 marks)



MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHARMACEUTICAL JURISPRUDENCE (PMA 307) (CREDIT BASED SYSTEM)

Friday, May 08, 2009

Time: 10.00-13.00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

- 1A. Write the procedure required to be followed by an institution proposing to conduct a course of study and examination for pharmacists, for approval by the Pharmacy Council of India. Under what circumstances can the approvals could be withdrawn?
- 1B. Write the licensing procedure for non bonded manufactory under the Medicinal and Toilet Preparations Act.
- 2A. Discuss briefly about manufacture, sale and export of opium.
- 2B. Differentiate between advertisement of drugs and advertisement of ordinary consumer goods. What are the objectionable advertisements specified under the Drugs and Magic Remedies (Objectionable Advertisement) Act, 1954.
3. Enlist provisions for the following Schedules as per D&C Act 1940 and Rules, 1945:
 1. Schedule J
 2. Schedule P
 3. Schedule P₁
 4. Schedule C₁
 5. Schedule G
 6. Schedule H
 7. Schedule C
 8. Schedule X

(8×3 = 24 marks)

✍ **Short Notes:**

- 4A. Explain Master Formula Records and Batch Manufacturing Records under Drugs and Cosmetics Act 1940.
- 4B. What is meant by “geographical indications”? Enlist any four geographical indications from India.
- 4C. Discuss in brief the ethics that a pharmacist should observe in relation to his profession and medical profession. Write a short note on origin of Pharmaceutical Legislation in India.
- 4D. Write about the maintenance of records under Drug Price Control Order.

(4×4 = 16 marks)

✍ **Short Answers:**

- 5A. Enlist the objectives of AICTE Act.
- 5B. Outline the Institutional Animals Ethics Committee under The Prevention of Cruelty to Animals Act.
- 5C. Under what circumstances a 12 week old pregnancy can be terminated?
- 5D. Explain “Health and Safety” of employees under The Shops and Establishments Act.
- 5E. What are the functions of Central Insecticide Board?

(2×5 = 10 marks)

