

**MANIPAL UNIVERSITY****THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017****SUBJECT: HOSPITAL AND COMMUNITY PHARMACY (PPR 301)****(CREDIT BASED SYSTEM)****(NEW SYLLABUS)**

Monday, July 17, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long essay type questions:**

1. Define Pharmacy Therapeutic Committee and explain the role of PTC in drug safety and Adverse Drug Reporting monitoring programme. (8 marks)
2. Define Hospital Pharmacy. Categorize its staff and explain their functions. (8 marks)
3. What is pharmaceutical care? Explain SOAP format. (8 marks)

4. **Short essay type questions:**

- 4A. Enumerate various methods of drug distribution system and explain any one method with its advantages and disadvantages.
- 4B. Explain the objectives of proper layout and layout design of community pharmacy.
- 4C. Explain perpetual method of inventory control.
- 4D. Explain strategies to improve medication adherence. (4 marks × 4 = 16 marks)

5. **Short answer questions:**

- 5A. Give two examples for narcotics and explain the procedure to prescribe the same to inpatients.
- 5B. Enumerate various resources for providing drug information.
- 5C. Give a formula for 'return on total assets' and 'return on owners equity'.
- 5D. Explain the parts of patient information leaflet.
- 5E. What is hospital formulary and formulary system? (2 marks × 5 = 10 marks)



**MANIPAL UNIVERSITY****THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017****SUBJECT: PHARMACY PRACTICE (PPR 301T)**  
(REVISED REGULATIONS 2014)

Monday, July 17, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Define Medication adherence and explain in detail five interacting dimensions of non-adherence.
2. Define adverse drug reactions and explain the mechanism of Type A and Type B adverse drug reactions.
3. Enumerate various methods of drug distribution systems and explain any three methods with its advantages and disadvantages.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

- 4A. Describe the contents of patient information leaflet.
- 4B. Explain good pharmacy practice guidelines for community pharmacy.
- 4C. Explain various communication skill required for pharmacists.
- 4D. What is central sterile supply room (CSSR)? Explain its layout with neat diagram.
- 4E. Explain role of purchasing agent and pharmacist in drug procurement in large hospital.
- 4F. Define Hospital and explain various classifications of hospitals.

(5 marks × 6 = 30 marks)

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

- 5A. Write the best method to assess the layout and design of the PILs.
- 5B. Maintaining of various record in the pharmacy is very important.
- 5C. Pharmacy technicians should not dispense the drugs to the patients.
- 5D. Formulary system economical to the hospital but not to the patients.
- 5E. Inventory control is needed for any drug store.

(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302)  
(CREDIT BASED SYSTEM)

Wednesday, July 19, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL the questions.

✍ Draw neat labelled diagrams wherever necessary.

✍ Long essays questions:

1. With the help of a neat labelled diagram describe the construction and working of a typical fermenter.

(8 marks)

2. Discuss the production of recombinant human insulin.

(8 marks)

3. Describe the production and standardization of cholera vaccine.

(8 marks)

4. Short essay questions:

4A. Describe the facilities required to set up an animal tissue culture laboratory.

4B. Explain the production of Salk type Polio vaccine.

4C. Write a note on technical and economic advantages of microbial enzymes over plant and animal enzymes.

4D. Explain the working and advantages of a rotary continuous filter with the help of a neat labelled diagram.

(4 marks × 4 = 16 marks)

5. Short answer questions:

5A. Differentiate between putrefaction and fermentation.

5B. How do the physical conditions differ in the production of alcohol and baker's yeast when the same yeast is employed?

5C. What are restriction enzymes? Give examples.

5D. Write in brief the principle involved in microbial assay by cup plate method.

5E. Mention any one advantage and disadvantage for using glass as a construction material.

(2 marks × 5 = 10 marks)



## MANIPAL UNIVERSITY

### THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

#### SUBJECT: PHARMACEUTICAL BIOTECHNOLOGY (PBT 302T) (REVISED REGULATIONS 2014)

Wednesday, July 19, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Discuss recombinant DNA technology with respect to; selection criteria for vectors, limitations as hosts and enzymes used in this technology.
2. With the help of a neat labelled diagram, describe the structure, features and types of antibodies.
3. Classify the different enzyme immobilization methods. Describe the principle, advantages and disadvantages of any two methods.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

- 4A. Explain the processes of bacterial conjugation and transduction.
- 4B. Enlist and describe the facilities required for setting up an animal tissue culture laboratory.
- 4C. Explain the potential applications of stem cells.
- 4D. What is attenuation? Explain the production of an attenuated bacterial vaccine.
- 4E. Describe the production and standardization of Diphtheria vaccine.
- 4F. Explain the concept of protein therapeutics. Enlist the advantages of therapeutic proteins.

(5 marks × 6 = 30 marks)

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

- 5A. Fermentation is different from Putrefaction.
- 5B. Restriction enzymes synthesized by bacteria cleaves foreign DNA and not the host DNA.
- 5C. Frame shift mutation could be different from point mutation.
- 5D. Primary screening is indicative, whereas secondary screening is confirmative.
- 5E. Somatic gene therapy is more acceptable than germinal gene therapy.

(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

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

Friday, July 21, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Mention different types of colloids and mention any four differences between them.  
(8 marks)
2. Discuss any four factors affecting gastric emptying of drugs. Explain any four factors affecting renal excretion of drugs.  
(4+4 = 8 marks)
3. Explain the particle size determination by sedimentation method.  
(8 marks)

4. **Short Notes:**

- 4A. Discuss the various oxidative phase I reactions for Carbon-Nitrogen systems.
- 4B. Explain any four factors affecting protein binding of drugs.
- 4C. State and explain Fick's first law of diffusion.
- 4D. Mention any four differences between flocculated and deflocculated suspensions.  
(4 marks × 4 = 16 marks)

5. **Short answers:**

- 5A. What is critical micelle concentration? What is its significance?
- 5B. Write about HLB scale and its utility in pharmaceutical formulations.
- 5C. Define bioequivalence and therapeutic equivalence.
- 5D. Enlist any two methods to enhance bioavailability of drugs.
- 5E. Define 'Plastic viscosity' and 'yield value'.  
(2 marks × 5 = 10 marks)



## MANIPAL UNIVERSITY

## THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

SUBJECT: PHYSICAL PHARMACEUTICS AND PHARMACOKINETICS (PCE 303T)  
(REVISED REGULATIONS 2014)

Friday, July 21, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ Answer ALL the questions.

✍ Long Answer questions:

1. Discuss different methods of preparation for Lyophobic colloids.
2. Write the effect of any five formulation excipients on the absorption of drugs. Discuss the significance of protein binding of drugs.
3. Derive equations for half-life and shelf life of first order reaction. Explain the dissolution testing of drugs using rotating basket apparatus.

(10 marks × 3 = 30 marks)

4. Short answer questions:

- 4A. Define electric double layer, Zeta potential and Nernst potential with a neat labelled diagram of electric double layer at the surface of solid-liquid interface.
- 4B. Explain the flow behaviour of Pseudoplastic fluids with an example.
- 4C. Explain the determination of absorption rate constant of drug in blood by method of residuals when administered by extravascular route assuming that it follows one compartment open model.
- 4D. Compare and contrast compartmental and physiological modelling of drugs.
- 4E. Explain any two methods to improve bioavailability of drugs.
- 4F. Discuss chelates with relevant examples and applications.

(5 marks × 6 = 30 marks)

5. Give reasons for the following:

- 5A. For microscopic method of particle size analysis, the powder particles are to be suspended in a nonreactive liquid vehicle. Why?
- 5B. If the powder is porous, the true density determination by liquid displacement method may not be adequate. Why?
- 5C. Why adults are preferred over pediatrics and geriatrics as volunteers for a bioequivalence study?
- 5D. Why thiopentone is absorbed to a greater extent than barbitone even though they have similar pKa values?
- 5E. Why the time duration of half-life is greater than shelf-life?

(2 marks × 5 = 10 marks)



## MANIPAL UNIVERSITY

## THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

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

Monday, July 24, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL the questions.

✍ Long Essays:

1A. Classify H<sub>1</sub>-antihistamines with examples giving one structure from each class.

1B. Write the general structural requirements of H<sup>1</sup> antihistamines.

(4+4 = 8 marks)

2A. Explain the importance of studying solubility and partition coefficient of drugs in medicinal chemistry.

2B. How do you synthesis salbutamol and Clonidine?

(2+6 = 8 marks)

3A. Discuss the SAR of HMG-CoA-reductase Inhibitors. Give the structure of atorvastatin.

3B. Write the synthesis of Verapamil.

(5+3 = 8 marks)

4. Short Essays:

4A. Classify Adrenergic blockers giving example for each class.

4B. Outline the synthesis of Indomethacin and mefenamic acid.

4C. Discuss the SAR features of carbonic anhydrase inhibitors.

4D. Write the synthesis of tolbutamide and Glibencamide.

(4 marks × 4 = 16 marks)

5. Short Answers:

5A. Electron releasing substituents are preferred on the pyridine ring of proton pump inhibitors. Explain.

5B. Organophosphorous poisoning is more difficult to treat.

5C. Give the structure any one alpha-glucosidase inhibitor and describe how they are useful in the treatment of diabetes mellitus.

5D. The Nitrogen containing ring in ACE inhibitors must contain a carboxylic acid.

5E. Heparin is not given orally.

(2 marks × 5 = 10 marks)



# MANIPAL UNIVERSITY

## THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

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

Monday, July 24, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

☞ **Answer ALL the questions.**

☞ **Long Essays:**

1. Enumerate the different physicochemical properties of a drug molecule and discuss the effect of any three properties on the biological activity of the drug. (8 marks)

2A. What is the chemical mechanism action involved in the cholinesterase drugs of irreversible and how do you treat organophosphorous poisoning?

2B. Write the synthesis of Procyclidine and Tropicamide. ((2+2)+(2+2) = 8 marks)

3. Classify antiepileptics with example giving one structure from each class. Outline the synthesis of phenytoin and trimethadione. (8 marks)

4. **Short Essays:**

4A. Explain the SAR of Benzodiazepines as Antianxiety agents. Give the synthesis of Chlordiazepoxide. (4 marks)

4B. Classify general anesthetics with examples and outline the synthesis of one drug from two different classes. (4 marks)

4C. Name two imidazoline derivatives used as sympathomimetics and write their structures. Outline the synthesis of any one such derivative. (2+2 = 4 marks)

4D. Outline the synthesis of diclofenac and mefenamic acid. (2+1+1 = 4 marks)

5. **Short Answers:**

5A. Outline the synthesis of Baclofen and Meprobamate and mention their uses.

5B. Write the structures and uses of Lignocaine and Atropine.

5C. Write the structure and synthetic route of any one beta adrenergic blocking agent.

5D. What are proton pump inhibitors? Give two examples with structures.

5E. Write the synthesis of Meperidine.

(2 marks × 5 = 10 marks)





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# MANIPAL UNIVERSITY

## THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

### SUBJECT: MEDICINAL CHEMISTRY - I (PCH 304T) (REVISED REGULATIONS 2014)

Monday, July 24, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long essays questions:**

- 1A. Classify calcium channel blockers as antianginal agents with examples giving one structure from each class.
- 1B. Discuss the structural features and SAR of 1,4-dihydropyridines as antianginal agents and give the synthesis of any one 1,4- dihydropyridine derivative used as antianginal agent.
- 1C. Give the structure and uses of any two H<sub>2</sub> receptor antagonist.

(2+6+2 = 10 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 carbachol and pralidoxime.

(6+4 = 10 marks)

- 3A. Explain with examples, the role of Ionic bond and Hydrogen bond as forces in drug receptor interaction.
- 3B. Give the chemical synthesis of Propranolol and Clonidine.

(6+4 = 10 marks)

4. **Short answer questions:**

- 4A. Give the synthesis of Meperidine and Dicyclomine.

(5 marks)

- 4B. Discuss the SAR of HMG-CoA-reductase Inhibitors as antihyperlipidemic agents. Give the structure of any one HMG-CoA-reductase Inhibitor.

(5 marks)

- 4C. i) Classify oral hypoglycemics with examples give one structure from each class.  
ii) Write the synthesis of glibenclamide.

(3+2 = 5 marks)

- 4D. i) Write the IUPAC name and synthesis and ibuprofen.

- ii) What are eicosanoids? Give the structure of any two eicosanoids used in clinical practice.

(3+2 = 5 marks)

- 4E. Write the importance of optical activity and protein binding in medicinal chemistry. (5 marks)
- 4F. Classify adrenergic drugs giving example. Write the structure and chemical name of Methyl dopa. (5 marks)

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

- 5A. What structural feature of Flurbiprofen makes it 25 times more potent than Ibuprofen?
- 5B. Compared to acetylcholine, bethanechol has longer duration of action and better muscarinic selectivity.
- 5C. Hydrochlorothiazide is ten times more potent diuretic than chlorothiazide.
- 5D. Norepinephrine is alpha agonist while isoproterenol is beta agonist.
- 5E. Diuretics are used as antihypertensive.

(2 marks  $\times$  5 = 10 marks)



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**MANIPAL UNIVERSITY**

**THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017**

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

Wednesday, July 26, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL questions.**

✍ **Draw diagrams wherever necessary.**

✍ **Long essay questions:**

1. Describe the various processes of bio-transportation with suitable examples.  
(8 marks)
2. Explain the synthesis, storage and release of thyroid hormone and list the drugs affecting it.  
(5+3 = 8 marks)
3. Depict the sites of action of diuretics with a neat, labeled diagram of nephron. Enumerate the uses and side effects of potassium sparing diuretics.  
(5+3 = 8 marks)

4. **Short essay questions:**

- 4A. Explain the management of organophosphorus poisoning.
- 4B. List the metabolic reactions of folic acid.
- 4C. Explain the mechanism of action of digitalis.
- 4D. List the antihypertensive drugs acting on the RAAS pathway. Explain the mechanism of action of any one class of drugs.  
(4 marks × 4 = 16 marks)

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

- 5A. Alteplase is preferred to streptokinase for acute myocardial function
- 5B. The chelating agent, BAL, is contraindicated in the treatment of iron poisoning
- 5C. Alpha blockers may cause impotence in men
- 5D. Aspirin should be cautiously given to asthmatics
- 5E. Organic nitrates are used for the treatment of cyanide poisoning  
(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

SUBJECT: PHARMACOLOGY -I (PHA 305T)  
(REVISED REGULATIONS 2014)

Wednesday, July 26, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Explain Phase-I biotransformation reactions with examples.  
(10 marks)
2. Draw the structure of a nephron and indicate the site of action of diuretics. Explain the mechanism of action of any two classes of diuretics.  
(2+8 = 10 marks)
3. Classify oral anti-diabetic drugs. Explain the mechanism of action of any two classes of oral hypoglycemic agents.  
(2+8 = 10 marks)

4. **Short answer questions:**

- 4A. Explain the mechanism of action of quinidine.
- 4B. With the help of a diagram explain the mechanism of action of anticholinesterase.
- 4C. Explain the mechanism of action of any one class of drug used in benign prostate hypertrophy.
- 4D. Explain the mechanism of action of warfarin. List its adverse effects.
- 4E. Narrate the role of cAMP in various signal transduction mechanisms.
- 4F. Explain the mechanism of action of clomiphene citrate.  
(5 marks × 6 = 30 marks)

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

- 5A. Angiotensin converting enzyme inhibitors produce dry cough
- 5B. Corticosteroids therapy should not be stopped abruptly after prolonged use
- 5C. Low dose of aspirin inhibits platelet aggregation
- 5D. The pharmacogenetics Variation in Drug response (ADR) due to enzyme deficiency
- 5E. Rectal route can be employed for both local and systemic administration of drugs. Explain with examples.  
(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

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

Friday, July 28, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL questions.

✍ Draw neat labelled diagrams and structure wherever necessary.

✍ Long Essay:

1. Describe the Pharmacognosy of Licorice.
2. What are Resins? Classify them with examples. Give various methods of preparation of Resins.
3. Write the pharmacognostic report on Cardamom.

(8 marks × 3 = 24 marks)

4. Short Essays:

- 4A. Describe in detail the maceration process for organized and unorganized drug add a note on factors affecting the same.
- 4B. Give the source active constituent, uses and microscopy of fennel.
- 4C. Explain the biogenesis of Prunasin.
- 4D. Explain Isoprenoid pathway in the Biosynthesis of Secondary metabolites.

(4 marks × 4 = 16 marks)

5. Short Answers:

- 5A. Give one the qualitative identification tests for:
  - i) Flavonoides
  - ii) Reducing sugars
  - iii) Phytosterols
  - iv) Alkaloid
- 5B. Differentiate volatile oils from fixed oils
- 5C. Botanical source, Chemical constituents and uses of Quassia
- 5D. Give the powder characters of Cassia
- 5E. Substituents and adulterants of Senna

(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

### THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

#### SUBJECT: PHARMACOGNOSY - 3 (PCO 306T) (REVISED REGULATIONS 2014)

Friday, July 28, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 70

✍ **Answer ALL the questions.**

✍ **Long answer questions.**

1. Describe the source, chemical constituents, morphology and cultivation of Ergot.  
(1+1+1+2+5 = 10 marks)
2. What are Cardiac glycosides? Give their chemistry, method of extraction and chemical tests.  
(1+4+2+3 = 10 marks)
- 3A. Give the source, chemical constituents and uses of Rhubarb, Gokhru and Bitter almond.
- 3B. Differentiate morphologically Alexandrian Senna with Tinnevelly Senna leaflet.  
(6+4 = 10 marks)

4. **Short answer questions.**

- 4A. Conversion of (-) Reticuline to Morphine via codeinone
- 4B. Determination of Heavy metals in herbal raw materials
- 4C. Isolation, identification and estimation of Calcium sennosides
- 4D. Screening of drugs for Anti-inflammatory activity
- 4E. Classify various types of Plant Tissue Cultures and write a brief note on meristem culture
- 4F. Define an enzyme. Explain briefly the different methods involved in the extraction and purification of enzymes.  
(5 marks × 6 = 30 marks)

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

- 5A. Dioscorea powder is autoclaved with 2N or 4N hydrochloride during extraction
- 5B. Quinine is a standard in bitterness value determination
- 5C. Red Squill is used as a rodenticide
- 5D. PUFA is a nutraceutical
- 5E. UV radiation is one of the factors in the ageing of the skin  
(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

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

Monday, July 31, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essay Questions:**

- 1A. Write a detailed account on constitution and composition of Pharmacy Council of India.
- 1B. Explain method of calculation for Ceiling Price of a scheduled formulation as per DPCO 2013.
- 2A. Describe the functions of Narcotic Control Board.
- 2B. Mention Schedule H and X.
3. Write in detail about Good Manufacturing Practices as laid down in Drugs and Cosmetics Act 1940 and Rules 1945.

(8 marks × 3 = 24 marks)

4. **Short Note Questions:**

- 4A. Discuss in brief the ethics that a pharmacist should observe in relation to his Job and Profession.
- 4B. With what objectives Drugs and Magic Remedies Act was passed? Discuss briefly exempted advertisements.
- 4C. Describe the qualifications and duties of Food inspector and Public analyst.
- 4D. Explain in brief Patent, Trademark, Trade Secret and Geographical Indication.

(4 marks × 4 = 16 marks)

5. **Short Answer Questions:**

- 5A. Mention functions and powers of AICTE council.
- 5B. Outline the Institutional Animal Ethics Committee under “The Prevention of Cruelty to Animals Act”.
- 5C. Under what circumstances a 12 weeks old pregnancy can be terminated as per MTP Act?
- 5D. Write the objectives of Poisons Act and Insecticides Act.
- 5E. Outline provision of Opening and Closing hours of Establishment as per “The Bombay Shops and Establishments Act”.

(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

### THIRD YEAR B. PHARM. DEGREE EXAMINATIONS – JULY 2017

#### SUBJECT: MEDICINAL CHEMISTRY – I (RGUHS SYLLABUS)

Saturday, July 22, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

- ✍ Your answers should be specific to the questions.
- ✍ Write the chemical reactions and structures wherever necessary.

#### ✍ Long Essays (Answer any TWO):

- 1A. Explain the structural elucidation of Ephedrine.
- 1B. What are catecholamines? How are they synthesized in our body? Give the synthesis of any one adrenergic agonist.

(5+5 = 10 marks)

- 2A. What are Narcotic analgesics? Give at least four examples with structure. Outline the synthesis of meperidine.
- 2B. What are the modifications made in Morphine and how this modifications affect the analgesic activity? Discuss with examples.

(10 marks)

- 3A. What are antihistaminics? Classify them with examples and giving structure of one drug from each class.
- 3B. Give the synthesis, use and chemical name of Diphenhydramine and pheniramine.

(5+5 = 10 marks)

#### 4. Short Essays (Answer any EIGHT):

- 4A. What is the importance of geometric isomerism and chelation property of a drug in relation to biological activity?
- 4B. What are the theories involved in drug receptor interactions? Discuss.
- 4C. Outline the synthesis of Methohexital and Phenobarbital. Give their uses.
- 4D. What are skeletal muscle relaxants? Give two examples with structures and synthesis of one compound under this category.
- 4E. What are antiepileptics? Classify them with examples and give the structure of one compound under each class. Give the synthesis of phenisuximide.
- 4F. Classify parasympathomimetic drugs with examples. Give the synthesis of any two compounds.
- 4G. Write a short note on Papaverine and related compounds.



- 4H. What are Local anesthetics? Explain the SAR of benzoic acid derivatives with examples.
- 4I. Outline the synthesis of any two local anesthetics.
- 4J. Write the synthesis of one analgesic which come under aryl acetic acid and Anthranilic acid derivatives.

(5 marks × 8 = 40 marks)

5. **Short Answers:**

- 5A. What are H<sub>2</sub> receptor antagonist? Give the structure of any two.
- 5B. Write the mechanism of anticholinesterase agents.
- 5C. What are dissociative anesthetics? Give examples.
- 5D. Define Prodrug and Analogue with examples.
- 5E. What is a receptor? Which are the different types of forces existing in the drug receptor interaction?
- 5F. What are ergot alkaloids? Give examples with uses.
- 5G. List out imidazoline sympathomimetics. Give their structure and uses.
- 5H. Write the structures of Diazepam and Buspirone and mention their uses.
- 5I. Define Partition coefficient and Isosterism.
- 5J. What are ganglion blocking agents? Give examples with uses.

(2 marks × 10 = 20 marks)



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## MANIPAL UNIVERSITY

### THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

#### SUBJECT: PHARMACOGNOSY AND PHYTOCHEMISTRY

(RGUHS SYLLABUS)

Friday, July 28, 2017

Time: 10.00 – 13.00 Hrs.

Max. Marks: 80

✍ **Answer should be specific.**

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

✍ **Long essay (Answer any TWO):**

1. Define Alkaloids. Classify them with examples. Give an account of isolation and identity tests.
2. Pharmacognosy of Senna.
3. Discuss the techniques employed in the elucidation of biogenetic pathways.

(10 marks × 2 = 20 marks)

4. **Write a short essay on any EIGHT of the following:**

- 4A. Chemistry of Cardiac glycosides and test for Digitoxose
- 4B. Source, morphology, constituents and uses of Nux-vomica
- 4C. Biosynthesis of Reserpine
- 4D. HPTLC and its role in separation
- 4E. Types of Aloes and their method of preparation
- 4F. Source, constituents and uses of two drugs containing Tropane alkaloids
- 4G. General method for isolation of phytoconstituents
- 4H. Histological evaluation of natural products
- 4I. General methods of isolation of Essential oils
- 4J. Chemistry of Resins

(5 marks × 8 = 40 marks)

5. **Write the short answers on the following:**

- 5A. Powder microscopy of Cinnamon
- 5B. Constituents and uses of Ginger
- 5C. Gold beaters skin test
- 5D. Morphology of Eucalyptus
- 5E. Types of Cannabis
- 5F. Classification of Tannins
- 5G. Combined Umbelliferone test
- 5H. Differentiate Gambier catechu from Black catechu
- 5I. Preparation of Colophony
- 5J. Structure and uses of Podophyllotoxin

(2 marks × 10 = 20 marks)



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## MANIPAL UNIVERSITY

### THIRD YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017

#### SUBJECT: PHARMACOLOGY-I (RGUHS SYLLABUS)

Monday, July 31, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ **Long Essays (Answer any TWO questions):**

1. Classify adrenergic drugs with examples. Discuss the actions of adrenaline on the heart, blood pressure and metabolism. Mention any two therapeutic uses.  
(6+3+1 = 10 marks)
2. Classify anti- convulsant agents giving examples. Describe the mechanisms of action of two drugs used for grandmal epilepsy.  
(5+5 = 10 marks)
3. Describe the actions of digitalis on a failing heart. Write its mechanism of action and adverse effects.  
(4+4+2 = 10 marks)

4. **Short Essays (Answer any EIGHT):**

- 4A. List five de-merits of oral route of administration.
- 4B. Describe the processes of drug absorption.
- 4C. Write a note on iron.
- 4D. Describe the uses and adverse effects of NSAIDs.
- 4E. Classify anti- anginal drugs giving examples.
- 4F. Briefly write on general anaesthetics.
- 4G. Explain any five biotransformation reactions.
- 4H. Discuss the nicotinic and muscarinic actions of acetylcholine.
- 4I. Give a brief account of clinical trials.
- 4J. Define competitive and non- competitive antagonism, giving an example each.  
(5 marks × 8 = 40 marks)

5. **Short answers (Answer ALL):**

- 5A. List four differences between sympathetic and para- sympathetic nervous systems.
- 5B. Write the mechanism of action of quinidine.
- 5C. Enumerate the adverse effects of nitroglycerin.
- 5D. Name two anti- hypertensive agents with different mechanisms of action.
- 5E. List two nasal decongestants.
- 5F. What are uricosurics? Give an example.
- 5G. Name two anti- parkinsonian agents.
- 5H. Enumerate two fibrinolytics. List their uses.
- 5I. List the drugs used for the treatment of glaucoma.
- 5J. Define bioavailability. Name one factor reducing it.  
(2 marks × 10 = 20 marks)

