

**MANIPAL UNIVERSITY****FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017****SUBJECT: CLINICAL PHARMACY AND THERAPEUTICS (PPR 401)  
(CREDIT BASED SYSTEM)**

Tuesday, July 18, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essay:**

- 1A. Discuss the systematic approaches for answering drug information question.  
1B. Write the various drug information resources with two examples for each.

(5+3 = 8 marks)

2. Explain the management of hypertension according to JNC-VII guidelines.

(8 marks)

- 3A. Explain the clinical symptoms and the management of acute renal failure.  
3B. Write the management of any two complications of chronic renal failure.

(4+4 = 8 marks)

4. **Short Essay:**

- 4A. Draw the algorithm of general management of epilepsy.  
4B. Explain the management of acute exacerbation of COPD.  
4C. Draw the treatment algorithm for management of osteoarthritis.  
4D. Write the management of advanced Parkinson's disease.

(4 marks × 4 = 16 marks)

5. **Short Answer:**

- 5A. Enlist various professional activities of clinical pharmacist (CP).  
5B. Explain role of heparin in management of Myocardial Infarction.  
5C. Write levothyroxine dosing in hypothyroidism treatment.  
5D. Enlist the significance of highly active antiretroviral therapy.  
5E. Write DSM-IV criteria for schizophrenia.

(2 marks × 5 = 10 marks)



# MANIPAL UNIVERSITY

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

### SUBJECT: INSTRUMENTAL AND BIOMEDICAL ANALYSIS (PQA 402) (CREDIT BASED SYSTEM)

Thursday, July 20, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL questions.

✍ Draw neatly labeled diagram wherever necessary.

✍ Long Essay:

1A. Name HPLC column efficiency parameters and write the equation to calculate resolution.

1B. With the help of schematic diagram explain the instrumentation of Gas chromatography apparatus.

(4+4 = 8 marks)

2. Explain the theory of UV-Visible spectroscopy.

(8 marks)

3A. Write about Installation, Operational and Performance Qualification of an analytical instrument.

3B. Explain with graph, the conductometric titration for the mixture of strong acid and weak acid against a strong base.

(4+4 = 8 marks)

4. Short Essay:

4A. i) Explain the principle of the assay of thiamine by fluorimetry

ii) Write a note on flame atomisation in atomic absorption spectroscopy

(2+2 = 4 marks)

4B. Explain the molecular vibrations observed in IR spectroscopy.

(4 marks)

4C. i) Explain the types of scattering in nepheloturbidimetry.

ii) Differentiate elastic and inelastic scattering with examples.

(2+2 = 4 marks)

4D. i) Classify mass spectrometers.

ii) Write a note on direct current plasma in atomic emission spectroscopy.

(2+2 = 4 marks)

5. **Short Answer:**

- 5A. Why tetra methyl silane is used as internal standard in NMR spectroscopy?
- 5B. What is thermal analysis? Write any two applications of the same.
- 5C. What is polarimetry? List its applications.
- 5D. Write a note on affinity chromatography and one application of the same.
- 5E. Explain the role of supporting electrolyte in polarography.

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



## MANIPAL UNIVERSITY

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

#### SUBJECT: INDUSTRIAL PHARMACY (PCE 403) (CREDIT BASED SYSTEM)

Saturday, July 22, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Classify various semisolid bases with their merits, demerits giving examples for each type.  
(8 marks)
2. Define lipstick. Enlist a standard lipstick formula mentioning use of each ingredient and briefly explain the manufacturing procedure.  
(8 marks)
3. Mention different methods of preparation of Liposomes and explain any one method.  
What are different types of transdermal drug delivery systems? Explain any one type.  
(4+4 = 8 marks)

4. **Short Notes:**

- 4A. Write about the various types of propellants with examples.
- 4B. Explain Ocuserts.
- 4C. Define suspensions. Explain the formulation of suspension.
- 4D. Explain the Extraction of gelatin with the help of a flow-sheet.  
(4 marks × 4 = 16 marks)

5. **Short Answers:**

- 5A. Define radiopharmaceuticals. Mention its two therapeutic uses.
- 5B. Mention important evaluation tests for plastics as pharmaceutical packaging material.
- 5C. Define and classify emulsion.
- 5D. Give the formulation requirements of mascara.
- 5E. Describe the test for uniformity of content and limits for passing the test.  
(2 marks × 5 = 10 marks)





**MANIPAL UNIVERSITY**  
**FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017**  
**SUBJECT: MEDICINAL CHEMISTRY – II (PCH 404)**  
**(CREDIT BASED SYSTEM)**

Tuesday, July 25, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Classify antibiotics giving one structure from each class and explain the SAR of Tetracyclines. Discuss the importance of beta lactamase inhibitors with an example.  
(3+3+2 = 8 marks)
- 2A. What are diuretics? Classify them with one example and its structure under each class. Write the synthesis of one diuretic.
- 2B. Explain the MOA of nitro vasodilators as anti anginal agents. Write the chemical name and synthesis of one calcium channel blockers.  
(4+4 = 8 marks)
- 3A. Classify sulpha drugs giving one structure under each class. Discuss their SAR and outline the synthesis of any one sulpha drug.
- 3B. Give the use and scheme for the synthesis of Pyrazinamide and metronidazole.  
(4+4 = 8 marks)

4. **Short Essays:**

- 4A. Write the structure, use and mechanism of action of following drugs:  
i) Clotrimazole      ii) Diethylcarbamazine      iii) Acyclovir      iv) Propylthiouracil
- 4B. Explain the MOA of DNA alkylators and give the structure of two alkylating agents.
- 4C. What are anticoagulants? Mention their uses. Outline the synthesis of warfarin.
- 4D. Write the SAR and mechanism of action of 4-Quinolones as urinary tract anti-infectives.  
(4 marks × 4 = 16 marks)

5. **Short Answers:**

- 5A. Out line the method of synthesis of proguanil.
- 5B. Write the synthesis of clofibrate and mention its use.
- 5C. Write the structure and uses of two anti estrogens.
- 5D. Classify hypoglycemic agents with examples. Write the structures of any two of them.
- 5E. Explain antisense technology of drug design. List out its applications.  
(2 marks × 5 = 10 marks)



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**MANIPAL UNIVERSITY**

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

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

Thursday, July 27, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the pharmacological actions of aspirin. Enumerate its uses and adverse effects.  
(4+2+2 = 8 marks)
2. Enumerate four first-line antitubercular drugs. Explain the mechanism of action of any one of them. What is the role of each of these drugs in the treatment of tuberculosis?  
(2+2+4 = 8 marks)
3. With a neat diagram, describe the physiology of vomiting and indicate the sites of action of antiemetic drugs. Explain why 5-HT<sub>3</sub> antagonists are very effective in chemotherapy-induced vomiting. Enumerate the uses and adverse effects of metoclopramide.  
(4+2+2 = 8 marks)

4. **Short Essays:**

- 4A. Describe the mechanism of action of alkylating agents as anticancer drugs.
- 4B. Explain the mechanisms of action of sodium valproate.
- 4C. Explain the principles of Enzyme-linked Immunoassays.
- 4D. Describe the general measures to treat cases of poisoning.  
(4 marks × 4 = 16 marks)

5. **Give Reasons:**

- 5A. Penicillin- aminoglycoside combination is very useful in streptococcal endocarditis.
- 5B. Acyclovir has selective toxicity against virus-infected cells.
- 5C. Tetracyclines are not recommended for treating infections in pregnant women or in children below 10 years of age.
- 5D. Local anaesthetics are formulated as salts rather than as free bases.
- 5E. Imipramine antagonises the antihypertensive effect of clonidine.

(2 marks × 5 = 10 marks)



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## MANIPAL UNIVERSITY

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

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

Saturday, July 29, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

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

#### ✍ Long Essays:

1. Describe Ipecac under a suitable pharmacognostic scheme. (8 marks)
- 2A. Define and classify Enzymes. Describe the isolation of Bromelain.
- 2B. Describe the diagnostic characters and mode of action of Pyrethrum. (4+4 = 8 marks)
3. Give the biological source, method of extraction, identification and estimation of Quinine. (8 marks)
4. **Short Essays.**
- 4A. Describe the nutritional requirements of a Plant Tissue Culture medium. (4 marks)
- 4B. Describe some important aspects of GMP for herbal drug manufacture. (4 marks)
- 4C. Explain the preparation of Allergenic extracts. (4 marks)
- 4D. i) Discuss the Law of Similaris.  
ii) Give an account of any one herbal Industry in India. (2+2 = 4 marks)

#### 5. **Short Answers.**

- 5A. Define and classify bitters with examples
- 5B. Dolastatin and Bryostatin
- 5C. Probiotics and prebiotics
- 5D. Source and uses of any two Hepato-protective agents
- 5E. Powder characters of Vasaka

(2 marks × 5 = 10 marks)





**MANIPAL UNIVERSITY**  
**FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017**  
**SUBJECT: PHARMACEUTICAL MANAGEMENT (PMA 407)**  
**(CREDIT BASED SYSTEM)**

Monday, July 31, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Long essay questions:**

1. Discuss internal and external sources of recruitment with advantages and disadvantages of each source.
2. Discuss Journal, Ledger, Petty cash book and Trial balance.
3. What is the importance of Inventory Control in Pharmaceutical industry? Add a note on EOQ and ABC method of inventory control.

(8 marks × 3 = 24 marks)

4. **Short note questions:**

- 4A. Discuss scope and importance of Environmental studies
- 4B. Explain ten principles of Economics
- 4C. Describe pharmaceutical distribution channels in India
- 4D. Schematically discuss Product Life Cycle

(4 marks × 4 = 16 marks)

5. **Short answer questions:**

- 5A. What are various skills required at each top, middle and lower level of management?
- 5B. What is Line and Staff function?
- 5C. Write on ISO 9000 and 50,000 series of standards.
- 5D. Define Assets and Liabilities.
- 5E. Enlist determinates of demand.

(2 marks × 5 = 10 marks)





**MANIPAL UNIVERSITY****FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017****SUBJECT: PHARMACEUTICAL TECHNOLOGY AND BIOPHARMACEUTICS  
(RGUHS SYLLABUS)**

Monday, July 24, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

**Answer any TWO questions:**

1. Discuss Moist heat sterilization and Dry heat sterilization methods used in the production of sterile products.
2. Explain the process of film coating of Tablets. Mention any four key factors for good film coating.
3. What are different methods of manufacturing soft gelatin capsules? Explain Rotary die process.

(10 marks × 2 = 20 marks)

**Answer any EIGHT questions:**

- 4A. Define semisolids. Explain percutaneous absorption of drugs from the formulations.
- 4B. Explain Solution aerosol systems and Water based aerosol systems.
- 4C. Define lipstick. Mention any six ideal characteristics of lipstick.
- 4D. Mention diagnostic applications of Radiopharmaceuticals with examples.
- 4E. Write about different types of glass used in pharmaceutical packaging.
- 4F. Explain the importance of current Good Manufacturing Practices.
- 4G. Mention different raw materials used in the formulation of liquid orals with examples.
- 4H. Explain any one osmotic pump in detail.
- 4I. Explain the role of surfactants in aerosol systems.
- 4J. Mention different methods of preparation of liposomes. Explain any one method.

(5 marks × 8 = 40 marks)

**Answer ALL questions:**

- 5A. Define Absolute and Relative bioavailability.
- 5B. Mention the role of diluents in tablet dosage form. Give examples.
- 5C. Write the formula of vanishing cream along with function of each ingredient.
- 5D. Mention different types of packaging material used for sterile products.
- 5E. Mention different filling methods for Liquid dosage form.
- 5F. Mention two tablet defects and reasons for the same.
- 5G. What are the different sizes of hard gelatin capsules?
- 5H. Write four features of passive diffusion mechanism of absorption of drugs.
- 5I. Differentiate between Tooth powder and Tooth paste.
- 5J. Mention different methods of aerosol filling.

(2 marks × 10 = 20 marks)



## MANIPAL UNIVERSITY

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

#### SUBJECT: INDUSTRIAL PHARMACOLOGY (RGUHS SYLLABUS)

Friday, July 21, 2017

Time: 10.00-13.00 Hrs.

Max. Marks: 80

- ✍ **Answers should be specific to the questions.**
- ✍ **Draw neat labeled diagrams and chemical structures wherever necessary.**

#### 1. Long Essays: (Answer any two)

- 1A. Describe the method of isolation, identification and estimation of Glycyrrhizin.
  - 1B. Explain the method of production and applications of Streptokinase.
  - 1C. Describe Brahmi under suitable monograph with special emphasis on its standardization.
- (10 marks × 2 = 20 marks)

#### 2. Short Essays: (Answer any eight)

- 2A. Give the importance and current scenario of herbal medicines
  - 2B. Estimation of constituents of Kalmegh
  - 2C. Principles involved in Unani system of medicine
  - 2D. Analytical technique for the estimation of vasicine
  - 2E. Principles involved in Polyploidy
  - 2F. Sterilisation of explant in tissue culture
  - 2G. Applications of Biotechnology in tissue culture and allied fields
  - 2H. Preparation and uses of any proteolytic enzyme which you have studied
  - 2I. Mechanism involved in cell Immobilisation
  - 2J. Determination of Arsenic in herbal raw materials
- (5 marks × 8 = 40 marks)

#### 3. Short Answers: (Answer all)

- 3A. Legal test
  - 3B. Significance of water soluble ash
  - 3C. Bitterness value
  - 3D. Structure and uses of Quinine
  - 3E. Define Gutika with examples
  - 3F. Role of colchicine in polyploidy
  - 3G. Leshun
  - 3H. Tridosha principles
  - 3I. Differentiate between product patent and process patent
  - 3J. Ashoka
- (2 marks × 10 = 20 marks)



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**MANIPAL UNIVERSITY**

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

**SUBJECT: INSTRUMENTAL AND BIOMEDICAL ANALYSIS  
(RGUHS SYLLABUS)**

Wednesday, July 19, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

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

1. Explain the light source, monochromators and detectors used in UV and Visible spectrophotometer.
2. Describe the principle of Potentiometric titrations. Write the construction and working of Calomel and Glass electrode.
3. Explain the principle, technique, limitations and applications of paper chromatograph.

(10 marks × 2 = 20 marks)

**Short Essay: (Answer any EIGHT of the following):**

- 4A. Explain the structural requirements for a molecule to exhibit fluorescence.
- 4B. Explain the types of electronic transitions observed, when organic molecules absorb U.V radiation.
- 4C. Describe suitable methods to obtain the IR spectrum for solid samples.
- 4D. Enumerate the sources of radiations for IR spectrophotometer.
- 4E. Explain the derivatization in fluorimetry with two examples.
- 4F. Explain the conductometric titration of strong acid Vs weak base and weak acid vs weak base.
- 4G. Write and explain Ilkovic equation. Explain its importance.
- 4H. Explain the preparation of TLC plates.
- 4I. Write a note on detectors in HPLC.
- 4J. Explain the construction and working of Katharometer.

(5 marks × 8 = 40 marks)

**Short Answers: (Answer the following):**

- 5A. Define the terms R<sub>f</sub>, R<sub>x</sub>, hR<sub>f</sub> and R<sub>m</sub>.
- 5B. What is the difference between Silica Gel H, Silica Gel G, Silica Gel GF and Silica Gel P?
- 5C. Expand and explain HETP.
- 5D. List four drugs that are assayed by their inherent fluorescence.
- 5E. List the limitations of Beer's law.
- 5F. List the factors affecting chemical shift.
- 5G. List the factors affecting absorption spectra.
- 5H. Define the terms Absorbance and Absorptivity.
- 5I. What is Electrophoresis? Mention the types.
- 5J. Explain with examples, the usefulness of Bratten Marshal reagent in Colorimetric analysis.

(2 marks × 10 = 20 marks)





**MANIPAL UNIVERSITY****FOURTH YEAR B. PHARM. DEGREE EXAMINATION – JULY 2017****SUBJECT: MEDICINAL CHEMISTRY – II  
(RGUHS SYLLABUS)**

Tuesday, July 18, 2017

Time: 10.00-13.00 Hrs.

Max. Marks: 80

**✍ Long Essays (Answer any TWO):**

- 1A. Classify antifungal agents with examples giving the structure of one agent from each class.  
1B. Discuss SAR of thiazide diuretics. Write the synthesis of any one thiazide diuretic.  
(4+6 = 10 marks)
- 2A. Define antibiotics. Classify them with examples. Give the structure of two tetracyclines mentioning their uses.  
2B. Classify antihypertensive agents giving the structure of one agent from each class. Give the chemical name and synthesis of enalapril.  
(5+5 = 10 marks)
- 3A. Classify anticancer agents with one example. Give the synthesis of any two of them.  
3B. Explain SAR of sulphonamides as antibacterial agents. Write the method of preparation, chemical name and specific uses of sulphamethoxazole.  
(5+5 = 10 marks)

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

- 4A. Write the structure, chemical name and uses of the following:  
i) Propylthiouracil                      ii) Phenindione                      iii) Tolbutamide  
iv) Procainamide                      v) Amiodarone
- 4B. Give the synthesis, mechanism of action and specific uses of INH and chloramphenicol.  
4C. Discuss SAR of quinolones.  
4D. What are antiseptics? Distinguish them from disinfectants. Classify them by giving one structure from each class.  
4E. Outline the method of preparation and uses of tolnaftate and metronidazole.  
4F. Discuss the chemistry and SAR of amino glycoside antibiotics.  
4G. What is the principle involved in combinatorial chemistry? Explain the various techniques in it.  
4H. Discuss the stereochemistry and SAR of penicillins giving the structures of two of them.  
4I. Explain the structure and mechanism of action of 5-fluorouracil and cyclophosphamide.  
4J. Classify antimalarial agents with examples. Write the synthesis, chemical name and mechanism of action of chloroquin.

(5 marks × 8 = 40 marks)



5. **Short Answers: (Answer ALL questions):**

- 5A. Write the structure and uses of Acyclovir and Ketoconazole.
- 5B. Outline the synthesis of Glibenclamide and mention its use.
- 5C. Write the structure and use of Dapsone and Lindane.
- 5D. Write the structure of two orally active penicillins.
- 5E. Write the structure and mechanism of action of Dicoumarol.
- 5F. Outline the synthesis of a dye used as antibacterial agent.
- 5G. What are prodrugs? Give examples and their advantages.
- 5H. What are antiamebic agents? Give any two examples with structures.
- 5I. Write the structure and mechanism of action of Lovastatin.
- 5J. What is trisuphas? Mention its uses.

(2 marks × 10 = 20 marks)

