MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL ORGANIC CHEMISTRY
(RGUHS SYLLABUS)

Friday, May 05, 2017

Time: 10:00 – 13:00 Hrs.   Max. Marks: 80

✍ **Long Essays: (Answer any TWO)**

1. What are amino acids? Classify them with examples. Give two methods of synthesis of amino acids with mechanism.

2. What is optical isomerism? What are the conditions for a compound to show optical isomerism? Describe the optical isomers of tartaric acid.

3. Explain the stereochemistry S_N1 and S_N2 reactions.

(10 marks × 2 = 20 marks)

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

4A. Define acid value, iodine value, Saponification value and give thier significance.

4B. Explain various methods for the resolution of racemic mixtures.

4C. Discuss the stereochemistry of oximes.

4D. Explain the term asymmetric synthesis.

4E. Explain briefly the nucleophilic reactions of pyridine.

4F. Give the mechanism of Haworth synthesis of naphthalene and give any two reactions of naphthalene.

4G. Write the basic structure, pharmacological activity and medicinal uses of phenothiazine derivatives.

4H. Give the structure and uses of:
    i) Phenazone   ii) Diazepam   iii) Pyrazinamide   iv) Metronidazole

4I. Give the Newman's formula for n-propyl chloride. Which is the more stable conformer and Why?

4J. Explain why 3rd position of indole is favoured for electrophilic attack.

(5 marks × 8 = 40 marks)

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

5A. Define the term diastereomers with example.

5B. Explain gold berg method of synthesis of acridine.

5C. Write the structures of azepine and oxepine.

5D. Give the structure and use of sucrose.

5E. Define the term mutarotation.

5F. Give the structures of pyrazine and pyrimidine.

5G. Differentiate between reducing and non-reducing sugars.

5H. What are essential amino acids? Give examples.

5I. What do you understand by the term chirality?

5J. Outline the synthesis of glucose from arabinose.

(2 marks × 10 = 20 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL CHEMISTRY (PCH 204T)
(2014 REGULATION)

Friday, May 05, 2017

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

✎   **Answer ALL the questions.**

✎   **Long answer questions:**

1A.   Explain Hantzch synthesis of pyridine and discuss the important reactions of pyridine.
1B.   What are the conditions for a biphenyl compound to show optical isomerism?
1C.   Write the structure of oxazole, oxazolidine, benzthiazole and benzimidazole.

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

2A.   Explain the N-terminal analysis of a protein with an example.
2B.   What are carbohydrates? Explain the arguments of Fischer for open chain structure of D-Glucose.

(4+6 = 10 marks)

3A.   Explain the chemistry and uses of ephedrine.
3B.   Define and classify glycosides with examples.
3C.   Write the structure and uses of citral.

(5+3+2 = 10 marks)

4.   **Short answer questions:**

4A.   Explain Fischer indole synthesis and give the structure and uses of indomethacin.
4B.   Explain the structural elucidation of vitamin-A.
4C.   Write the structure and uses of the following:
   i)   Phenytoin   ii)   INH
   iii)   Imipramine   iv)   Cycloserine
4D.   Explain the preparation and uses of any two calcium containing inorganic pharmaceutical compounds.
4E.   Write the preparation and uses of zinc oxide and aluminium hydroxide gel.
4F.   Give the method of preparation and uses of:
   i)   Ferrous gluconate   ii)   Ammonium chloride

(5 marks × 6 = 30 marks)

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

5A.   Caffeine on reaction with HI at 200°C gives xanthine and three molecules of methyl iodide. Justify with reaction.
5B.   Pyridine is highly reactive towards nucleophilic reactions.
5C.   In 2-bromocyclohexenone, bromine takes up axial position rather than the equatorial position
5D.   Steroids cannot undergo ring-flips.
5E.   Linseed oil has high iodine value.

(2 marks × 5 = 10 marks)

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SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL CHEMISTRY (PCH 204)
(CREDIT BASED SYSTEM)

Friday, May 05, 2017

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

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1A. Discuss the chemistry of papaverine.
1B. Explain Hoffmann's exhaustive methylation and EMDE methods of degradation in determining the structure of alkaloids with suitable examples.

(4+4 = 8 marks)

2A. Explain Paul-Knorr synthesis of pyrrole and discuss the electrophilic substitution reactions of pyrrole with suitable example
2B. Write the structures of oxazoline and oxazolidine.

((3+3) +2 = 8 marks)

3A. How do you convert ketopentose to aldopentose? How do you prove the cyclic structure of D-glucose?
3B. Explain azlactone synthesis of amino acids.
3C. Explain N-terminal residual analysis of proteins.

(4+2+2 = 8 marks)

4. **Short Essays:**

4A. Discuss the methods to determine the functional nature of oxygen in terpenoids.

(4 marks)

4B. i)   What are nucleoside? Give example
     ii)   Define the term rancidity

(2+2 = 4 marks)

4C. Explain the stereochemistry of oximes and azo compounds.

(4 marks)

4D. Why electrophilic substitution takes place in furan at 2nd position? Explain

(4 marks)

5. **Short Answers:**

5A. What is the biological role of DNA and RNA?
5B. Give the structure and uses of sennosides.
5C. Define and classify glycosides with suitable examples.
5D. In 2-bromocyclohexenone, why bromine takes up the axial position rather than the equatorial position?
5E. What are lignans chemically? Give the medicinal uses of any one lignan.

(2 marks × 5 = 10 marks)

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: APPLIED BIOCHEMISTRY
(RGUHS SYLLABUS)

Monday, May 08, 2017

Time: 10:00 – 13:00 Hrs.   Max. Marks: 80

1.   **Answer any THREE questions:**

1A. Describe the nature of the enzymes. Emphasize on the effect of substrate and inhibitors on its action.

1B. Describe the biosynthesis and breakdown of purines.

1C. Explain T.C.A. cycle emphasizing its role in the metabolism of amphibolic intermediates.

1D. Describe the electron transport chain. Describe how ATP is synthesised by oxidative phosphorylation. Indicate how these processes can be modified.

(12 marks × 3 = 36 marks)

2.   **Answer any SIX questions.**

2A. What are phospholipids? What is their function?

2B. Write short note on glucuronic acid pathway.

2C. Write a note on prostaglandin.

2D. Explain briefly the fluid mosaic model of cell membrane.

2E. What is the significance of liver function test?

2F. Give an account of biochemical functions of folic acid.

2G. Write briefly on recombinant DNA and its uses.

2H. Calculate the energy requirement of adult sedentary worker. Explain the proportion of dietary sources to meet the energy need.

(4 marks × 6 = 24 marks)

3.   **Answer ALL the questions.**

3A. What is glutathione? Explain its important functions.

3B. Write the biochemical defect in Van Gierke's disease.

3C. Write a note on hepatic porphyria.

3D. Mention the salient features of posttranslational modifications.

3E. What are essential fatty acids? Name their biological function.

3F. What are the structural features of tRNA?

3G. Write the role of conjugation process in detoxification.

3H. How active methionine is formed?

3I. What are the characteristics of genetic code?

3J. State two inhibitors of protein synthesis. Indicate their mode of action.

(2 marks × 10 = 20 marks)

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SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL MICROBIOLOGY (PBT 202T)
(2014 REGULATION)

Monday, May 08, 2017

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

✎   **Answer ALL the questions.**

✎   **Long answer questions:**

1.   Briefly explain the lytic and lysogenic life cycle of bacteriophage.
2.   Draw a neat labelled diagram of an industrial autoclave and describe its design.
3.   What is an antibiotic policy, why it is needed? Discuss briefly on various types of antibiotic policies.

(10 marks × 3 = 30 marks)

4.   **Short answer questions:**

4A.   Write a note on growing anaerobic bacteria.
4B.   Explain the effect of time of contact and temperature on the activity of disinfectants.
4C.   Briefly outline the procedure for microbiological assay of antibiotics by two level factorial assay.
4D.   Explain the merits of Phenol coefficient tests.
4E.   It is often necessary to amputate the affected limb in gas gangrene to save the patient. Why? How this can be avoided?
4F.   Write the causative agent, mode of transmission, important symptoms, prevention and treatment of rabies.

(5 marks × 6 = 30 marks)

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

5A.   Ultrathin sectioning is necessary for TEM but not for SEM.
5B.   Bacterial endospores have high heat resistance.
5C.   *Aspergillus* species can be differentiated from *Penicillium* species microscopically.
5D.   Autoclaving is not suitable to sterilise milk and vaccines.
5E.   Infections from *E coli* cannot be treated with vancomycin.

(2 marks × 5 = 10 marks)

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SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL MICROBIOLOGY (PBT 202)
(CREDIT BASED SYSTEM)

Monday, May 08, 2017

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

✍ **Answer ALL the questions.**

✍ **Put question numbers properly with margin.**

✍ **Long Essay:**

1. Enlist the methods of enumeration of bacterial cells. Explain any one method each for the determination of viable count and total count.

2. Draw a neat labeled diagram of an Industrial autoclave and describe its design.

3. Define and classify immunity, give an account of phagocytosis.

(8 marks × 3 = 24 marks)

4. **Short Essay:**

4A. Enlist various methods of cultivation of viruses. Explain any one method in detail.

4B. Describe the determination of Rideal Walker Coefficient.

4C. Citing suitable examples, give a brief outline of different types of infections based on routes of infections.

4D. Write the causative agent, mode of transmission, important symptoms, prevention and treatment of tetanus.

(4 marks × 4 = 16 marks)

5. **Short Answer:**

5A. Why is autoclaving not a suitable method of sterilization for vaccines and milk?

5B. Enlist methods of preservation of bacteria.

5C. What are the differences between TEM and SEM?

5D. Enlist the methods of bactericidal evaluation of disinfectants.

5E. What is Kovac's reagent? Mention its application.

(2 marks × 5 = 10 marks)

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PATHOPHYSIOLOGY (PPR 201T)
(2014 REGULATION)

Wednesday, May 10, 2017

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

✍ **Answer ALL the questions.**

✍ **Long Answer Questions:**

1. Explain the role of cytokines in acute inflammation.
2. Define malaria and explain its pathophysiology with the help of a neat diagram.
3. Define cell injury. Explain different mechanism of cell injury.

(10 marks × 3 = 30 marks)

4. **Short answer questions:**

4A. Define angina. Classify different types of angina.
4B. Explain the pathophysiology of type 2 diabetes.
4C. Explain the pathophysiology of ischemic stroke.
4D. Explain type III hypersensitivity reaction.
4E. Explain pathophysiology of hypothyroidism.
4F. Define asthma. Enlist different types of triggers causing asthma attacks.

(5 marks × 6 = 30 marks)

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

5A. Certain occupations trigger asthma attack.
5B. HIV patients are prone for activation of latent TB.
5C. Smoking is one of the risk factor for atherosclerosis.
5D. Vitamin B12 deficiency anemia is called as macrocytic anemia.
5E. Extreme dehydration leads to acute renal failure.

(2 marks × 5 = 10 marks)

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICS (PCE 203T)
(2014 REGULATION)

Friday, May 12, 2017

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

✍ **Answer ALL the questions.**

✍ **Long Answer Questions:**

1. What is the significance of Reynolds number in Pharmaceuticals? Mention the standard ranges. State Bernoulli's theorem and give TWO applications.

2. Enlist the Essential adjuvants and explain in detail the use of various Essential adjuvants with suitable examples used in preparation of Liquid dosage forms.

3. Classify powders. List the advantages and disadvantages. Explain effervescent granules.

(10 marks × 3 = 30 marks)

4. **Short Answer Questions:**

4A. Define Enema and mention various types. Add a note on Evacuant type of enema.

4B. Give examples for Insolubility and Immiscibility with remedy.

4C. What is bound and unbound water? Give examples.

4D. Explain how Sedimentation rate is evaluated for a suspension.

4E. Explain the working of Roller mill. What is closed circuit grinding?

4F. Write short note on Freeze dryer.

(5 marks × 6 = 30 marks)

5. **Give Reasons for the Following:**

5A. Organoleptic agents are required for liquid orals.

5B. Presence of solute in the liquid reduces the evaporation.

5C. Flocculating agents are required in suspension.

5D. Multi pass heat interchanger is highly efficient.

5E. Trituration is required to be done in only one direction while preparing an Emulsion.

(2 marks × 5 = 10 marks)

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACOGNOSY - II (PCO 206T)
(2014 REGULATION)

Monday, May 15, 2017

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1.   Give an account of various special methods of extraction of Volatile oils.
2.   Give the pharmacognostic report of Podophyllum.
3.   Give a detail account on Supercritical fluid extraction and HPLC.

(10 marks × 3 = 30 marks)

4.   **Short Answer Questions:**

4A.   What are allergenic extracts? Add a note on pollen and fungal extracts.
4B.   What are Sumatra and Siam Benzoin. How they are distinguished?
4C.   Give the source, chemical constituents and uses of Sandal wood oil and Geranium oil.
4D.   Describe Isoprenoid pathway in the biosynthesis of secondary metabolites.
4E.   Define conservation of medicinal plants. Give IUCN classification of endangered species and list out various causes of extinction.
4F.   Describe Neem as a natural pesticide.

(5 marks × 6 = 30 marks)

5.   **Give Reasons for the Following:**

5A.   Rubber tourniquet and epinephrine should always be available during the diagnosis of Allergy.
5B.   Why outer skin of Ginger is scrapped off?
5C.   Garlic is one of the very useful spice.
5D.   Terpeneless volatile oils are used in high priced cosmetics and perfumes.
5E.   Stevia is one of the good natural sweetener.

(2 marks × 5 = 10 marks)

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SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACOGNOSY - I (PCO 206)
(CREDIT BASED SYSTEM)

Monday, May 15, 2017

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

✍ **Answer ALL the questions.**

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

✍ **Long Essays:**

1. Write the botanical source, uses, morphology, microscopy and powder characteristics of Cassia bark with neat labelled diagram.

                                                                                (8 marks)

2. Source, preparation and uses of Spermaceti and wool fat.

                                                                          (4+4 = 8 marks)

3A. Discuss different methods of drying.

3B. Write a note on fertilizers used in cultivation of crude drugs.

                                                                          (5+3 = 8 marks)

4. **Short Essays:**

4A. Various methods of pest control

4B. Pharmacognosy of Agar

4C. Biological methods of evaluation

4D. Note on cell ergastic substances

                                                                    (4 marks × 4 = 16 marks)

5. **Short Answers:**

5A. Confirmatory test for pale and black catechu

5B. Glandular trichomes and its functions

5C. Source and uses of Castor oil

5D. List out the drugs acting on respiratory tract

5E. List out various uses of Honey

                                                                    (2 marks × 5 = 10 marks)

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL MANAGEMENT (PMA 205T)
(2014 REGULATION)

Wednesday, May 17, 2017

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

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Discuss types of Communication. Describe Communication Process.
2. With a neat labelled diagram explain product portfolio management and different marketing strategies to be adopted.
3. Write the advantages and limitations of Double Entry Book-Keeping. Classify the accounts and write rules for debiting and crediting.

(10 marks × 3 = 30 marks)

4. **Short Answer Questions:**

4A. Discuss Decision Making Models.
4B. Discuss in brief Indian Pharmaceutical Industry Scenario.
4C. Discuss seven steps involved in personal selling process.
4D. Enlist ten principles of economics and explain any four.
4E. What is EOQ? Discuss Methods for EOQ determination.
4F. Define Six Sigma and discuss DMAIC roadmap of Six Sigma.

(5 marks × 6 = 30 marks)

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

5A. Leaders can be easily differentiated from non-leaders by certain inborn traits.
5B. What is Transposing error and Sliding error?
5C. What is SMART objective?
5D. What is Law of Supply and Supply Schedule?
5E. What is the relationship between Entrepreneur and Entrepreneurship?

(2 marks × 5 = 10 marks)

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SECOND YEAR B. PHARM. DEGREE EXAMINATION – MAY 2017

SUBJECT: PHARMACEUTICAL ANALYSIS (PQA 205)
(CREDIT BASED SYSTEM)

Wednesday, May 17, 2017

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

✍ **Long Essays:**

1. Explain Nernst equation and factors affecting Nernst equation in detail with relevant examples.
2. Explain the titration curve of 100 ml of 0.1 M aqueous ammonia Vs 0.1 M hydrochloric acid with the special emphasis on pH at different points and suggesting a suitable indicator. (Dissociation constant of aqueous ammonia $k_b = 1.85 \times 10^{-5}$).
3. Enlist the conditions for formation of ideal precipitate.

(8 marks × 3 = 24 marks)

4. **Short essay:**

4A. Explain in brief different types of complexometric titration with an example each.

(4 marks)

4B. How is 0.1M perchloric acid prepared and standardized? What are the precautions required to be take while preparing the same?

(4 marks)

4C. Discuss the principle of Mohr's method in details with example.

(4 marks)

4D. i)   Explain how to prepare 250 ml of 50 mg/ml solution of Aspirin. (Molecular weight of Aspirin=180.15).

ii)   Enlist the conditions that a chemical reaction must fulfill for use in titrimetric analysis.

(2+2 = 4 marks)

5. **Short answer:**

5A. How the presence of nitrous acid after the equivalence point is determined by external indicator?
5B. What are the different indicators used in potassium bromate titrations?
5C. What do you mean by 'Hydrogen error' of an indicator?
5D. Enlist the different steps of gravimetry?
5E. What do you mean by "Standard deviation"? Give its formula.

(2 marks × 5 = 10 marks)

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