

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

(LO 2031)

MARCH 2019

Sub. Code: 2031

**B.PHARM. DEGREE EXAMINATION**  
**PCI Regulation – SEMESTER III**  
**PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – II**

*Q.P. Code: 562031*

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Discuss three different methods of synthesis of Anthracene. Mention some of its important properties. How can be Anthracene converted to anthraquinone and alizarine.
2. Explain the preparation and effect of substituents on the acidic character of phenols.
3. Define aromatic electrophilic substitution reactions. Discuss the reaction and mechanism of Nitration, Halogenation, Sulphonation, Friedel-craft alkylation and Friedel-craft arylation.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Write any three methods for synthesis of Diphenyl methane.
2. Explain chemical reactions of aromatic carboxylic acids.
3. What are the methods used for the synthesis of phenanthrene.
4. Discuss the basicity of amines.
5. Write the preparation and synthetic utility of diazonium compounds.
6. Explain about Resonance theory of benzene.
7. Write any five reactions of naphthalene.
8. What are lipids? Write their classification in detail.
9. Write a note on Bayer's strain theory.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Difference between an oil and fat.
2. Hinsberg test.
3. Structure and uses of DDT and BHC.
4. Waxes.
5. Hybridization.
6. Mechanism of Halogenation of benzene.
7. Fatty acids.
8. Sachse Mohr's theory.
9. Saponification value.
10. Structure and use of Cresol and Resorcinol.

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**B.PHARM. DEGREE EXAMINATION  
PCI REGULATION – SEMESTER III  
SECOND YEAR  
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – II**

*Q.P. Code: 562031*

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Explain the facts which supporting Kekule structure of Benzene. Briefly discuss about activating and deactivating group in Benzene.
2. Write the general method of preparations and reactions of aromatic amines.
3. a. Explain the various reactions of Fatty acids  
b. Determination of Iodine value with its significance.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Describe the effect of substituent of Benzene.
2. Explain any three method for preparation of Phenol.
3. Write a detailed note on Basicity of amines.
4. Write briefly on acidity and effect of substituents of Aromatic acids.
5. Explain the determination of acid value with its significance.
6. What happens when Naphthalene?
  - a. Reduce with  $H_2/Ni$
  - b. Oxidise with  $KMnO_4$
  - c. Addition of excess  $Cl_2$
  - d. With  $Con.HNO_3$  and  $Con.H_2SO_4$
  - e. With  $Con.H_2SO_4$  at  $40^\circ C$ .
7. Explain the Haworth synthesis for Naphthalene.
8. Describe about Coulson and Moffitt's modification.
9. Explain any two reactions of each of Cyclopropane and Cyclobutane.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Two synthetic utility of diazonium salt.
2. Write any two Qualitative tests for Phenol.
3. Preparation of Biphenyl from Benzdine.
4. Classify polynuclear hydrocarbons.
5. What do you mean Essential fatty acid? Give the examples.
6. Give structure and common name of two fatty acid.
7. Explain Williamson's ether synthesis.

Give the structure and uses of the following:

- |                        |                    |
|------------------------|--------------------|
| 8. a) DDT              | b) Saccharin       |
| 9. a) <i>p</i> -cresol | b) 1-Naphthol      |
| 10. a) Picric acid     | b) Diphenylmethane |

**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[LR 0121]**

**JANUARY 2021**

**Sub. Code: 2031**

**(MARCH 2020 EXAM SESSION)**

**B. PHARMACY DEGREE EXAMINATION**

**PCI REGULATION – SEMESTER III**

**PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – II**

***Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions.**

**(2 x 10 = 20)**

1. a) Write the general methods for the preparation of Amines.  
b) Enumerate the preparation and synthetic utility of Diazonium salts.
2. a) Write the structure of Naphthalene and briefly about the conventions used in Numbering Carbons.  
b) Haworth synthesis and reactions of Naphthalene.
3. Define Aromatic electrophilic substitution reactions. Discuss the reaction and mechanism of Nitration, Friedel-Craft's Alkylation and Friedel-Craft's Acylation Reactions.

**II. Write notes on: Answer any SEVEN questions.**

**(7 x 5 = 35)**

1. Write any three methods for synthesis of Diphenyl methane.
2. Bayer's strain theory.
3. Synthesis of Phenanthrene.
4. Structure and uses of  $\alpha$ ,  $\beta$ -Naphthol, Resorcinol and Chloramine.
5. Resonance theory of Benzene.
6. Chemical reactions of Anthracene.
7. Important reactions of Cyclobutane.
8. Chemical reactions of Aromatic Carboxylic acids.
9. Determination of Acid value.

**III. Short answers on: Answer ALL questions.**

**(10 x 2 = 20)**

1. Difference between an Oil and Fat.
2. Hinsberg test.
3. Lipids and its classification.
4. Synthesis and uses of Triphenyl methane.
5. Waxes.
6. Define hybridization.
7. Mechanism of Halogenation of benzene.
8. Acidity of Phenols.
9. Basicity of amines.
10. Saponification value.

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[BPHARM 0921]

SEPTEMBER 2021  
(SEPTEMBER 2020 EXAM SESSION)

Sub. Code: 2031

B.PHARM. DEGREE EXAMINATION  
PCI Regulation 2017 – SEMESTER III  
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – II  
*Q.P. Code: 562031*

Time: Three hours

Maximum: 75 Marks

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Details the mechanism of reactions of Benzene with various electrophiles. Brief notes on orientation of second substituent in mono substitutes Benzene.
2. Discuss the principle involved in the determination of analytical constants of Fats and Oils. Write their clinical importance.
3. Enumerate the necessary modifications suggested by Coulson – Moffit for cyclo alkanes. Give the reactions of Anthracene.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Draw the orbital picture of Benzene and write a note about it.
2. Give the preparations for the following with mechanism:  
i) meta-Dinitro benzene and ii) m – Cresol.
3. Replacement reactions of Diazonium Chloride with mechanism.
4. Brief about the basicity of Amines.
5. Haworth synthesis of Naphthalene.
6. Preparations and reaction of Diphenylmethane.
7. One medicinal compound with uses belonging to Triphenylmethane, Phenanthrene and Anthracene.
8. Draw the picture of i) Stable cyclohexane and ii) Angle strain in Cycloalkanes.
9. Resonance hybrid structure for Phenanthrene and write about its Resonance energy.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Why oils become rancid?
2. Saponification value.
3. Structure and medicinal uses of any two diphenylmethane derivatives.
4. Classify phenols with examples.
5. Structure and medicinal uses of DDT and BHC.
6. Give reason for the acidity of the phenols with the help of their resonance structure.
7. Schotten –Baumann reaction.
8. Compare their acidity: Salicylic acid, Benzoic acid and Nitro benzoic acid.
9. Give the reaction that yields soap and glycerol from fats and oils.
10. Define the value that is useful in finding the number of alcoholic groups present in fats and oils.



**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[BPHARM 0522]**

**MAY 2022  
(SEPTEMBER 2021 EXAM SESSION)**

**Sub. Code: 2031**

**B.PHARM. DEGREE EXAMINATION  
PCI Regulation 2017 – SEMESTER III  
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – II  
*Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Define & classify Polynuclear hydrocarbons. Enumerate the synthesis and reactions of naphthalene.
2. Briefly explain about the acidity of aromatic acids and the effect of substituents on acidity.
3. Explain the stability of cyclo alkanes on the basis of Bayer strain theory and brief out its limitations.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Give an account on the Friedel crafts alkylation and Friedel crafts acylation reaction with mechanism.
2. Write a note on the synthetic utility of aryl diazonium salts.
3. Write a note on the determination of acid value in fats and oils.
4. Brief out on Fries rearrangement with mechanism.
5. Write a note on the effect of electron withdrawing groups on electrophilic aromatic substitution reaction in benzene.
6. Write the synthesis of aryl alkyl ethers from phenol.
7. Give an account for reactions of anthracene.
8. Write the methods of synthesis of aromatic amines.
9. Write a note on the types of rancidity and the methods for prevention of rancidity.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Write the structure and uses of Saccharin and Chloramine.
2. Give a short account on primary, secondary and tertiary amines with examples.
3. What is Reichert- Meissl value?
4. Brief out on reduction reaction of phenanthrene.
5. Define fats, oils and waxes
6. Write the reaction of esterification of benzoic acid
7. Write on Wurtz Fittig reaction.
8. Mention the drawbacks of Friedel crafts alkylation.
9. Write the catalytic reduction reaction of propane.
10. Write a note on Elb's reaction.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[BPHARM 1022]**

**OCTOBER 2022  
(MARCH 2022 EXAM SESSION)**

**Sub. Code: 2031**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**

**PCI Regulation 2017 – SEMESTER III**

**PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY II**

***Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions.**

**(2 x 10 = 20)**

1. Briefly elaborate on the effect of substituents on benzene during electrophilic substitution reaction.
2. Elaborate on the determination of any three analytical constants of fats and oils and their significance.
3. Discuss briefly on the acidity of phenols and the effect of substituents on acidity.

**II. Write notes on: Answer any SEVEN questions.**

**(7 x 5 = 35)**

1. Write a note on diazonium salts.
2. Give an account on Kolbe's reaction with mechanism.
3. Brief out the tests to differentiate primary, secondary and tertiary amines.
4. Write a note on ortho effect on aromatic carboxylic acids.
5. Brief out on the hydrolysis and hydrogenation of fats and oils.
6. Give an account for the fact that phenols are more acidic than alcohols.
7. Give an account on Huckel's rule of aromaticity and orbital theory of benzene.
8. Briefly explain the reason for the preference of C9 position than C2 position in anthracene during chemical reactions.
9. Write a note on reactions of Benzene.

**III. Short answers on: Answer ALL questions.**

**(10 x 2 = 20)**

1. Write the method of preparation of picric acid.
2. Write the structure and use of Resorcinol and naphthol.
3. Give an account on the fate of aniline on reaction with potassium dichromate and sulphuric acid.
4. Write a note on Williamson's Ether synthesis.
5. Give an account on Coulson and Moffitt's modification in cycloalkanes.
6. Define fatty acid and give a detailed classification of fatty acids with examples.
7. Give any two examples of electrophilic substitution reactions of naphthalene.
8. Write about the ozonolysis reaction of benzene.
9. Write the reaction for the synthesis of benzoic acid from Grignard reagent.
10. Write on the addition reaction of cyclobutane with halogens.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 0323]**

**MARCH 2023  
(SEPTEMBER 2022 EXAM SESSION)**

**Sub. Code: 2031**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)  
PCI Regulation 2017 – SEMESTER III  
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY II**

***Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Enumerate briefly about the basicity of amines and brief on various chemical reactions of amines.
2. Discuss with all possible evidences about the Kekule structure of benzene.
3. Depict the synthesis and reactions of anthracene.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Write a note on the synthesis of diazonium salts.
2. Brief out on Reimer Tiemann reaction with mechanism.
3. Write a note on the general mechanism of electrophilic substitution reactions of benzene with emphasis on any two examples.
4. Write a note on the structure and composition of fats and oils.
5. Briefly write a note on the Gatterman reaction.
6. Briefly write a note on the reactions of benzoic acid.
7. Write any three methods of preparation of phenols.
8. Give an account on any two chemical reactions of fats and oils.
9. Write a note on drying of oils.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Write the structure and uses of DDT and BHC.
2. Give any one method of synthesis of diphenyl methane.
3. HINSBERG test.
4. Give an account on Diazo coupling reaction.
5. Write any two qualitative tests for phenol.
6. Write a brief note on activating and deactivating groups with examples.
7. Draw the structure and apply  $4n+2$  rule for naphthalene and 1, 3 cyclobutadiene.
8. Give an account on the resonance stabilization of benzene.
9. Give an account on acylation reactions of amines.
10. Calculate the angle of strain of cyclopropane.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 0823]**

**AUGUST 2023  
(MARCH 2023 EXAM SESSION)**

**Sub. Code: 2031**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**

**PCI Regulation 2017 – SEMESTER III**

**PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY II**

***Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Write the effect of substituents on acidity of phenols.
2. Explain the synthesis, properties and uses of naphthalene.
3. Write the classification and properties of oils and fats.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Write notes on Aryl Diazonium Salt.
2. Write notes on structure of benzene.
3. Write notes on aromatic character of benzene.
4. Write notes on effect of substituents on the basicity of aromatic amines.
5. Write notes on reactions of aromatic acids.
6. Write notes on acid value.
7. Write notes on synthesis and uses of anthracene.
8. Discuss about the Baeyer's strain theory.
9. Write notes on strainless theory.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Give the structure and uses of DDT.
2. Explain the tests for phenols.
3. Give the synthesis of lindane.
4. Give the synthesis of diphenyl methane.
5. Give the structure and uses of resorcinol.
6. Write notes on inductive and resonance effect.
7. List any two derivatives of phenanthrene with structure and use.
8. Write notes on ester value.
9. Give the structure and uses of derivatives of anthraquinone.
10. Write the synthesis of cyclohexane.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 1223]**

**DECEMBER 2023  
(SEPTEMBER 2023 EXAM SESSION)**

**Sub. Code: 2031**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)  
PCI Regulation 2017 – SEMESTER III  
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY II**

***Q.P. Code: 562031***

**Time: Three hours**

**Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Explain the structural evidence of benzene.
2. Discuss in detail about the analysis of fats and oil with their significance.
3. Write the effect of substituents on the basicity of aromatic amines and synthetic uses of diazonium salts.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Explain the effect of substituents on acidity of aromatic acids.
2. Write notes on synthesis and uses of phenanthrene.
3. Explain the rancidity of oils with their estimation.
4. Write notes on Coulson and Moffitt's modification.
5. Write notes on orientation of benzene.
6. Write notes on synthesis of cycloalkane.
7. Write notes on synthesis and uses of diphenylmethane.
8. Write the important reactions of phenol.
9. Write the reactions of cyclopropane and cyclobutane.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Give the structure and uses of chloramine.
2. Give the structure and uses of cresols.
3. Write the Friedelcrafts reaction of benzene.
4. Give the synthesis of naphthols.
5. Give the structure and uses of triphenylmethane.
6. Define iodine value.
7. Write notes on drying of oils.
8. Write notes on Baeyer's strain theory.
9. Give the structure and uses of anthracene.
10. Write the stability of cyclohexane.

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