

APRIL - 2001

[KD 702]

Sub. Code : 4162

FIRST B.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks  
Two and a half hours                  Sec. A & Sec. B : 60 marks  
for Sec. A & Sec. B                      Section C : 30 marks

Answer Sections A and B in the same Answer Book.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Define and classify Hydrogen bonding. How does it influence physical properties, boiling point and solubility.

(b) Explain the terms Atomic and Molecular orbitals.

(c) Which of the following are associated liquids? Draw the structure to show the hydrogen bonding

- (i)  $\text{CH}_3\text{OCH}_3$
- (ii)  $\text{CH}_3\text{NH}_2$
- (iii)  $\text{CH}_3\text{OH}$
- (iv)  $(\text{CH}_3)_2\text{NH}$ .

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2. (a) Discuss the fate and stability of carbonium ions.
- (b) Discuss the stability and ease of formation of free Radicals.
- (c) Explain Ozonolysis.
3. (a) Explain Markownikoff's addition and Anti Markownikoff's addition with example.
- (b) Addition of HCl to 3 methyl-1-butene yields a mixture of two alkyl chlorides. How is each formed? Give detailed equation.
- (c) Write the tests for purity and assay of liquid paraffin.
4. (a) Explain which carboxylic acid can be prepared from *p*-bromotoluene (i) by direct oxidation (ii) by free radical chlorination followed by the nitrile synthesis.
- (b) Explain the acidity of carboxylic acid in terms of its resonance stabilized anions to that of alcohol.
- (c) Explain why acyl halides are more reactive than alkyl halides towards nucleophilic substitution reaction.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Outline all steps for the synthesis of 3,5-dinitrobenzoic acid from toluene.
6. Explain the Bayer's Strain theory.

7. Describe the synthesis of carboxylic acids and phenols from Diazonium salts with examples.
8. Explain the aldol and crossed aldol condensations.
9. Describe the Friedel and Crafts alkylation mechanism with suitable examples.
10. Give the preparation and assay of Aspirin and how the salicylate in Aspirin is tested.
11. Give the method of preparation and uses of (a) Mephesisin (b) Sulphanilamide.
12. Comment on the basicity of Amines and give the general preparation of Amines.
13. Explain the effect of halogen on electrophilic aromatic substitution.

NOVEMBER - 2001

[KE 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks  
Two and a half hours                  Sec. A & Sec. B : 60 marks  
for Sec. A and Sec. B                  Section C : 30 marks

Answer Section A and Section B in same Answer Book  
and Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Describe the general methods for the preparation of aldehydes and ketones. Compare and contrast the properties of these two groups of compounds.
2. Explain the structural formula of ethylene in terms of its orbital picture. Outline the various methods for the preparation of alkenes and list the various addition reactions of alkenes. Explain the mechanism of electrophilic addition to alkenes.

3. Explain the preparation and uses of the following :

- (a) Iodoform
- (b) Aspirin
- (c) Vanillin
- (d) Amphetamine
- (e) Sulphanilamide.

4. Describe the concept and rules of resonance in organic compounds. Discuss its application to the structure of benzene. List a few typical reactions characteristic of aromatic rings.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the mechanism of halogenation of alkanes. Give evidence in support of the suggested mechanism.
6. Explain why  $S_N^1$  type reactions show racemisation and rearrangement while  $S_N^2$  type reactions show inversion but the rearrangement.

NOVEMBER - 2001

7. Comment on the fact that nitration of chlorobenzene is a slower process compared to nitration of benzene and the products are ortho and para nitro chlorobenzenes.

8. How are the following prepared from acetic acid :

- (a) Trichloro acetic acid
- (b) Acetamide
- (c) Acetyl chloride
- (d) Methyl amine
- (e) Glycine.

9. Explain the reaction of nitrous acid with aromatic primary, secondary and tertiary amines.

10. Describe the preparation of succinic acid and barbituric acid starting from diethyl malonate.

11. How are the following conversions affected?

- (a) 1-propanol into 2-propanol
- (b) Ethanol into propanol.

12. How can phenol be converted into salicylaldehyde? Discuss the mechanism of this reaction.

13. Why is aniline less basic than ammonia? Show how it can be converted into 1, 2, 3-tribromo benzene.

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MARCH - 2002

[KG 702]

Sub. Code : 4162

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours	Maximum : 90 marks
Two and a half hours for Sec. A & Sec. B	Sec. A & Sec. B : 60 marks Section C : 30 marks

Answer Sections A and B in same Answer Books.

Answer Section C in the answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Outline any five methods for the preparation of haloalkanes. Describe the mechanisms for the substitution reactions undergone by haloalkanes and discuss the evidence in support of each mechanism.
2. (a) Describe any three examples for the nucleophilic addition to carbonyl compounds. Explain why aldehydes are more reactive in addition reactions than ketones.  
(b) Explain the mechanisms of haloform reaction and aldol condensation.

## MARCH - 2002

3. (a) What is meant by aromaticity? Explain why benzene is considered to be a perfect specimen of aromatic character.

(b) Outline the mechanism for nitration of benzene. Discuss the effect of halogens on the reactivity and orientation in this reaction.

4. (a) How are amines classified? Give examples. Explain the distinguishing tests for the different classes of amines.

(b) Explain the reactions involved in the conversion of aniline into

- (i) *m*-nitroaniline
- (ii) *p*-bromoaniline
- (iii) Sulphanilic acid
- (iv) *p*-amino azobenzene
- (v) Benzanilide.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Discuss the method of preparation and one synthetic application of malonic ester.

6. Compare the synthetic utility of hydroboration - oxidation and alkoxy mercuration and demercuration methods in the preparation of alcohols.

7. Outline the method of preparation and explain the acidity of phenol. Show why phenol is more acidic than benzyl alcohol.

8. Explain the mechanism of halogenation of alkanes. Discuss the selectivity of halogens in this reaction.

9. Explain any four general methods for the preparation of carboxylic acids.

10. Describe the preparation and medicinal uses of aspirin and sulphanilamide.

11. Discuss the process of ozonolysis and its diagnostic significance.

12. Explain Bayer's strain theory.

13. Explain the preparation and synthetic uses of aryl diazonium compounds.

SEPTEMBER - 2002

[KH 702]

Sub. Code : 4162

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulation)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Two and a half hours                  Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B                  Section C : 30 marks

Answer Sections A and B in the **SAME** Answer Book.

Answer Section C in the Answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Explain the following reactions :

- (i) Rosenmund's reaction
- (ii) Cannizzaro reaction
- (iii) Meerwein Ponndorf reduction.

(b) Give the methods of preparation of phenol.

2. (a) Write the methods of preparation of Alcohol.

(b) Give the identification tests for alcohol.

(c) Write the principle involved in the assay of Chlorbutol and Dimercaprol.

3. (a) Give the methods of synthesis of Propene.

(b) Define Markonikov's rule with example.

(c) Write notes on free radical chain reaction.

4. (a) How do you distinguish the different classes of amine? Explain with example.

(b) What happens when

(i) Aniline is treated with nitrous acid

(ii) Aniline is treated with chloroform in the presence of KOH

(iii) Aniline is oxidised in the presence of  $K_2Cr_2O_7$  and  $H_2SO_4$

(iv) Aniline is treated with  $COCl_2$

(v) Aniline is treated with diazonium salt in the presence of NaOH at  $0^\circ C$ .

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SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Discuss the preparation and medicinal uses of paraldehyde and Hexamine.
6. Explain the following reactions :
  - (a) Kolbe's reaction
  - (b) Williamson synthesis.
7. Write notes on Bayer's strain theory.
8. Write briefly about 'peroxide effect' with example.
9. Explain Electrophilic aromatic substitution method with example.
10. Discuss the principle involved in the assay of Benzyl benzoate and sulphanilamide and mention their medicinal uses.
11. Explain the nucleophilic addition reaction with example.

12. Write any four methods for the preparation of carboxylic acids.

13. Discuss the method of preparation of malonic ester and mention its synthetic application.



APRIL - 2003

[KI 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Two and a half hours                  Sec. A & Sec. B : 60 marks  
for Sec. A and Sec. B                  Section C : 30 marks

Half an hour for Sec. C

Answer Section A and B in the **SAME** Answer Book and  
Section C in the Answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Write notes on the synthetic methods, reactions and identification tests for alkenes.
2. Give a comparative account of the mechanism, reactivity, orientation, effect of solvent and effect of base concentration of  $SN_1$  and  $SN_2$  reactions.

3. (a) Give an account on the synthetic uses of melonic ester.

(b) What are carbonium ions? Explain the structure, types and relative stability of carbonium ions.

4. Write notes on the mechanism of electrophillic aromatic substitution with example and effect of substituent on the reactivity and orientation on electrophillic aromatic substitution.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain polar bonds, non-polar bonds and dipole moment.

6. Write notes on Markovnikov's rule and reason for such orientation.

7. Explain ozonolysis and its importance in the determination of molecular structure.

8. Write notes on acidity of phenols and effect of substituent on the acidity of phenols.

9. Write notes on resonance and its importance.

10. Explain the preparation, assay and uses of Aspirin.

11. Explain the mechanism of

(a) Cannizaro reaction

(b) Aldol condensation.

12. Explain the mechanism of halogenation of alkane including reactivity and orientation.

13. How will you effect the following conversions :

(a) Benzene to Benzoic acid

(b) Benzene to para bromoaniline.

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FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Two hours and forty minutes Sec. A & Sec. B : 70 marks  
for Sec. A and Sec. B                      Section C : 20 marks

Twenty minutes for Sec. C

Answer Sections A and B in the **SAME** Answer Book  
and Section C in the Answer Sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

1. What is  $S_N^2$  reaction? Discuss the mechanism of  $S_N^2$  reaction with the help of one suitable example? Give proof for the mechanism.

2. Mention any two general methods of synthesizing alcohols along with mechanism? How will you distinguish between primary, secondary and tertiary alcohols with the help of a chemical test?

3. State and explain Markovnikoff's Rule and Peroxide effect with the help of suitable example. Give the mechanism also. Explain Diels Alder reaction with a suitable example.

4. Define the term 'Hybridization'. With one example for each class, explain  $sp^1$ ,  $sp^2$  and  $sp^3$  hybridizations.

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

5. Explain the mechanism of Nitration of Benzene.

6. What is Grignard's reagent? How is it prepared? Using Grignard's reagent, how many different classes of compounds can be synthesized? Give the synthesis of any one of them.

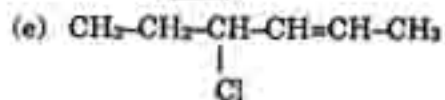
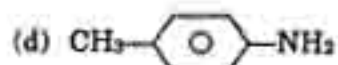
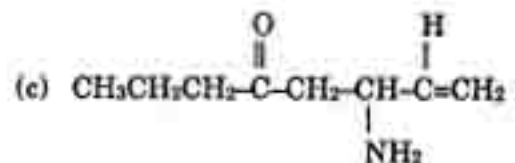
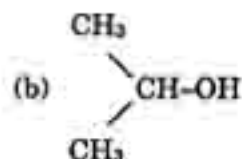
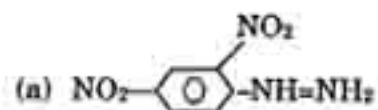
7. Give the mechanism of  $E_1$  reaction with the help of one example.

8. Give the synthesis and application of Malonic ester.

9. Explain the mechanism of Reimer-Tiemann reaction.

10. Using diazonium synthesis, how will you convert Benzene to 2, 6-dibromotoluene.

11. Give the IUPAC names of



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12. Discuss the stability of conjugated dienes with example.

13. Give the assay and medicinal uses of (a) Aspirin (b) Carbomal.

14. Give the general method of preparation and any two typical reactions of monocarboxylic acid.

15. Give the synthesis and medicinal uses of (a) Saccharin (b) Chloramine T.

16. Explain Bayer's strain theory and mention its limitations.

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APRIL - 2004

[KK 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Sec. A & B : Two hours and

Sec. A & B : 70 marks

forty minutes

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer Section A and B in **SAME** Answer Book and  
M.C.Q. in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any **TWO** questions.

1. (a) Explain various types of hybridization in carbon compounds with example. Mention the reasons for hybridization.

(b) What do you mean by hydrogen bonding? Explain intermolecular and intramolecular hydrogen bonding. Mention their importance.

2. What are alcohols? How are they classified? Write notes on the synthetic methods and reactions of alcohols.

3. (a) Give an account on the synthetic applications of acetoacetic ester.

(b) Write notes on the reactions of diazonium salts.

4. (a) Write notes on the structure, types and stability of free radicals and explain any one reaction involving free radical.

(b) Give an account on the reactions of carboxylic acids.

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

5. Explain the formation, nature and stability of Pi bond with suitable example.

6. Write the chemical nature, use and assay of ichthammol.

7. What is peroxide effect? Explain the reason for peroxide effect.

8. Explain Tautomerism with example.

9. Explain the electrophilic addition reaction in conjugated diene.

10. Write notes on Bayer's strain theory.

11. Write any three reactions of Benzene.

12. Explain the reaction mechanism, reactivity and orientation of E<sub>1</sub> reaction.

13. Write notes on the basicity and effect of substituents on the basicity of amines.

APRIL - 2004

[KK 702]

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CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Two hours and forty minutes    Sec. A & Sec. B : 70 marks  
for Sec. A and Sec. B

Twenty minutes for M.C.Q.              M.C.Q. : 20 marks

Answer Sections A and B in the **SAME** Answer Book.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Describe the general methods of the preparation and reactions of alcohols. How does hydrogen bonding influences the physical properties of alcohols?
2. Write briefly on :
  - (a) Nucleophilic substitution reactions
  - (b) Elimination reactions.

3. Explain the preparations and uses of the following :
- Sulphanilamide
  - Dimecraprol
  - Chloralhydrate
  - Lopanoic acid.
4. Write a note on :
- Bayer's strain theory
  - Markovnikoff's and peroxide effect.
- SECTION B — (8 × 5 = 40 marks)
- Answer any EIGHT questions.
5. Define the term "Aromaticity" discuss the modern theory of aromaticity making a special mention of Huckel rule.
6. Phenols are acidic in character. Explain in detail.
7. How are the following conversions done?
- Aniline to P-bromoacetamide
  - Salicylaldehyde from phenol.
8. Write general methods of preparation of carboxylic acids.
9. Write briefly on diazonium salts.
10. Explain the following with suitable examples :
- Dienes
  - Polarity of bond.
11. Write preparation test for purity and uses of
- Chloramine
  - Amphetamine.
12. Write the assay and uses of
- Hexamine
  - Dichloramine "T".
13. Give the method of preparation and uses of Ethers.
14. Write notes on basicity and effect of substituents on the basicity of amines.



FEBRUARY - 2005

[KM 702]

Sub. Code : 4162

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(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Sec. A & B : Two hours and              Sec. A & B : 70 marks  
forty minutes

M.C.Q. : Twenty minutes                  M.C.Q. : 20 marks

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

Each question carries 15 marks.

Essay Questions :

1. What are elimination reactions? Explain the mechanisms of  $E_2$  and  $E_1$  reactions with suitable examples. Give evidences for  $E_2$  and  $E_1$  mechanisms.
2. Explain the structure of benzene.
3. What are carboxylic acids? Give its classification with examples. Write the general methods of preparation and reactions of carboxylic acids.

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4. Explain the theory of carbonium ions. Write the mechanism involved in the electrophilic addition of hydrogen bromide to propylene and 1, 3-butadiene.

SECTION B — (8 × 5 = 40 marks)

Answer any EIGHT questions.

Short notes :

5. Give the mechanism of chlorination of methane.
6. What is ozonolysis? Give its importance in the structural elucidation.
7. Write any four methods of preparation of cycloalkanes.
8. What is Friedel Crafts alkylation? Give its mechanism and limitations.
9. Explain any three chemical methods to differentiate primary, secondary and tertiary alcohols.
10. Write the synthetic uses of acetoacetic ester.
11. Explain the mechanism of Hoffmann degradation of amides.
12. Write the mechanisms of aldol and crossed aldol condensation.

13. Write the preparation, assay and medicinal uses of aspirin.

14. Give the replacement reactions of diazonium salts.

15. Explain  $sp^3$  hybridisation with a suitable example.

16. What is hydrogen bonding? Give its classification with an example. What are its effects on physical constants?

AUGUST - 2005

[KN 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay : (2 × 15 = 30)

Answer any TWO questions.

1. (a) What are nucleophiles? Explain why nucleophilic substitution is a typical reaction of alkyl halides. Discuss the kinetic and stereochemical evidence for the bimolecular reaction  $b_1$  molecular.

(b) Write a note on peroxide effect.

(c) Explain the molecular orbital theory.

(6 + 4 + 5 = 15)

2. (a) What are free radicals? Explain the free radical mechanism of chlorination and pyrolysis of alkanes.

(b) Write briefly on any TWO of the following :

(i) Covalent bond

(ii) Polarity of bond

(iii) Acidity of phenols.

(c) Write the tests for purity, assay and medicinal uses of any TWO of the following compounds :

(i) Chloroform

(ii) Methyl salicylate

(iii) Acetanilide. (6 + 5 + 4 = 15)

3. (a) Write four general methods of preparation of amines.

(b) Write two general methods of preparation of Acetoacetic ester.

## AUGUST - 2005

(c) Write the method of preparation, assay and medicinal uses of the any two compounds :

(i) Trichloroacetic acid

(ii) Vanillin

(iii) Aspirin. (6 + 4 + 5 = 15)

4. (a) Write any three methods of preparation and any three reactions of alcohols.

(b) Write a note on resonance.

(c) What is Diazotisation? Write two synthetic applications of diazonium salts. (6 + 4 + 5 = 15)

II. Short notes on :: (8 × 5 = 40)

Answer any EIGHT questions.

1. (a) Electron donating groups are ortho and para directing groups. Why?

(b) Why aromatic amines and phenols give dye test positive? (3 + 2 = 5)

2. (a) What is keto-enol tautomerism? How it differs from resonance?

(b) Give the structure of the following compounds and name them as per IUPAC system : (3 + 2 = 5)

(i) Acetaldehyde

(ii) Formic Acid.

3. (a) What is a hydrogen bond? Give the names of two compounds capable of forming hydrogen bonds.

(b) State Markonikoff's rule with examples. (3 + 2 = 5)

4. Write the preparation, assay and medicinal uses of any one of the following compounds : (2½ + 2½ = 5)

(a) Glycerol

(b) Ethyl chloride.

5. How are the following conversions done? (2½ + 2½ = 5)

(a) Nitrobenzene to para nitroaniline

(b) Ethane to acetaldehyde.

6. Correct if necessary and explain the following :

(a) Alkynes are more reactive than alkene.

(b) Tertiary alcohols are easily converted to alkyl halides compared to secondary and primary alcohols.

(c) Diazotisation is carried out at high temperature.

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7. Write the tests for purity and assay of the following compounds :  $(2\frac{1}{2} + 2\frac{1}{2} = 5)$

- (a) Ichthamol
- (b) Liquid paraffin

8. What happens when

(a) Benzaldehyde is treated with conc. sodium hydroxide solution

(b) Glycerol is heated to high temperature

(c) Formaldehyde is treated with urea.

9. Write the tests of purity and medicinal uses of the following :

(a) Gamaxene

(b) Amphetamine.  $(2\frac{1}{2} + 2\frac{1}{2} = 5)$

10. Write the methods of purification of organic compounds with specific examples.

11. Arrange the members of the following groups according to decreasing acid strength giving reasons.

- (a) Benzoic acid
  - (b) Para benzoic acid
  - (c) Para nitro benzoic acid.
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[KN 736]

Sub. Code : 4227

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Modified Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                              Maximum : 90 marks

Theory : Two hours and forty minutes                              Theory : 70 marks

M.C.Q. : Twenty minutes                              M.C.Q. : 20 marks

I. Long Essay : (2 × 15 = 30)

Answer any TWO questions.

Each question carries 15 marks.

1. (a) Give an account of Bayer's strain theory. Why cycloalkanes having more than seven carbons are difficult to prepare, though there is no angular strains? What are the limitations of this theory? (9)

(b) Describe the following reactions :  
(i) Diel's-Alder reaction  
(ii) Cannizaro reaction. (6)

2. Mention any two general methods of synthesizing amines along with mechanism. How will you distinguish between primary, secondary and tertiary amines with the help of chemical tests?

3. What is SN<sup>1</sup> reaction? Discuss the mechanism of SN<sup>1</sup> reaction with the help of a suitable example. Give proof for the mechanism.

4. (a) What is resonance and hyper conjugation? Give one example each.

(b) Give two examples for each of the following :

- (i) Electrophilic substitution reaction
- (ii) Nucleophilic substitution reaction
- (iii) Free radical substitution reaction
- (iv) Nucleophilic addition reaction.

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. Explain the following terms with suitable examples :

- (a) Dipole moment
- (b) Energy of activation
- (c) Covalent bond.

2. What are alcohols? How are they classified? Enumerate any two general methods for the preparation of alcohols with suitable examples.

3. How do you explain the aromatic character and basic nature of aniline?

4. Explain the method of preparation of medicinal uses of the following :

- (a) Mephensin
- (b) Benzyl benzoate

5. Explain the mechanism of synthesis of acetoacetic acid and outline a few examples of its synthetic uses.

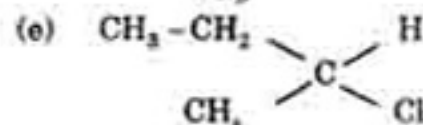
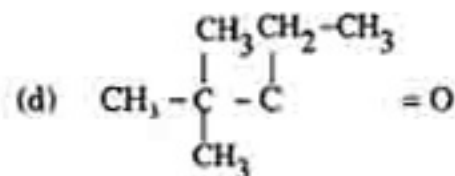
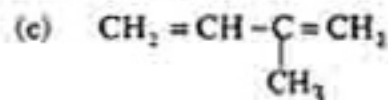
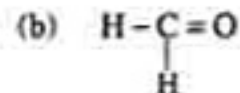
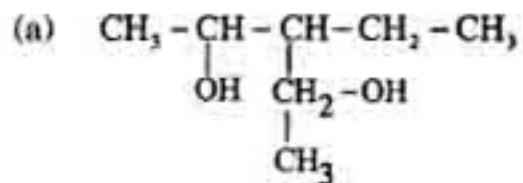
6. Explain the Markovnikov's rule including the mechanism and with an example.

7. How will you effect the following conversions?

- (a) Benzene to O-nitrobenzoic acid
- (b) Aniline to *p*-nitroaniline.

8. Explain the mechanism of Friedel crafts alkylation with suitable example.

9. Write the IUPAC name for the following compounds



10. Write any one method for the preparation and two reactions for the following :

- (a) Phenanthrene
- (b) Triphenyl methane.

11. Write any two synthetic methods and two reactions of Dienes.

12. Explain the method of preparation and medicinal uses of

- (a) Amphetamine
- (b) Hexamine.

FEBRUARY - 2006

[KO 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay : (2 × 15 = 30)

Answer any TWO questions.

1. (a) Explain electrophilic substitution, where does it takes place? Give examples of such reactions including mechanism.

(b) What are conjugated dienes? Explain the formation of 1 : 4 addition products in diene.

(c) Give the important reactions of alcohols.  
(6 + 5 + 4)

2. (a) Define aromatic character. Write a note on Huckels rule.

(b) Give any three methods of preparation and any three reactions of alicyclic compounds.

(c) Write the tests for purity, assay and medicinal uses of the following TWO compounds.

(i) Saccharim

(ii) Chloramine

(iii) Chlorbutol. (5 + 6 + 4 = 15)

3. (a) Write a note on Hydrogen bonding.

(b) Discuss the mechanism of halogenation of methane.

(c) Write the method of preparation and assay of the following any TWO compounds.

(i) Glyceryl Trinitrate

(ii) Benzyl benzoate

(iii) Paraldehyde. (5 + 6 + 4 = 15)

4. (a) Give any three distinguishing reactions between aldehydes and ketones.

(b) Explain the acidity of carboxylic acids.

(c) Give any three methods of preparation and three reactions of Amines. (6 + 3 + 6 = 15)



FEBRUARY - 2006

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. (a) Give the mechanism of Diels alder Reaction.  
(b) Explain the acidity of phenols. (3 + 2 = 5)
2. (a) Give the structure of the following compounds and name them as per IWPAC system.
  - (i) Acetone
  - (ii) Butyric acid(b) How is glycerol synthesised? Give its pharmaceutical uses. (3 + 2 = 5)
3. Write the tests for purity and medicinal uses of the following
  - (a) Sodium Lauryl sulphate
  - (b) Chloral hydrate.
4. (a) Write the reaction and synthesis involving diazodium salts.  
(b) How will you differentiate aliphatic amines from aromatic amines employing chemical tests? (3 + 2 = 5)
5. Outline the scheme for the following conversions. Write the structures, reagents and experimental conditions.

- (a) Benzaldehyde to cinnamic acid
  - (b) Benzene to para bromo acetanilide
  - (c) Ethyl alcohol to Diethyl ether.
6. Write a note on Free radical chain reactions.
  7. Write the methods of purification of organic compounds with specific examples.
  8. Arrange the members of the following groups according to decreasing acid strength giving reasons.
    - (a) Benzoic acid
    - (b) Para amino benzoic acid
    - (c) Para nitro benzoic acid.
  9. Write the test of purity, methods of preparation and medicinal uses of any TWO compounds.
    - (a) Sulfanilamide
    - (b) Tetrachloro ethylene
    - (c) Dicophane.

FEBRUARY - 2006

[KO 736]

Sub. Code : 4227

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Modified Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours                      Maximum : 90 marks

Theory : Two hours and                  Theory : 70 marks  
                  forty minutes

M.C.Q. : Twenty minutes                M.C.Q. : 20 marks

I. Long Essay :                              (2 × 15 = 30)

Answer any TWO questions.

1. What are poly nucleus aromatic hydrocarbons compounds? Write the synthesis and properties of diphenyl ethane, phenanthrene and naphthalene.

2. What are alkyl halides? How will you prepare alkyl halides and aryl alkyl halides write their mechanism of reaction with examples?

3. What are alkanes, alkenes and alkynes? Give two examples and write their IUPAC name.

4. What are polar covalent bonds, dipole moment and bond dissociation energy?

II. Short notes :                              (8 × 5 = 40)

Answer any EIGHT questions.

1. Write the preparation and uses of mephesisin and benzoic acid.

2. Explain the following terms with suitable examples.

(a) Resonance

(b) Conjugation

(c) Hyper conjugation

3. How will you explain the resonance structure of Benzene?

4. Write the synthesis and medicinal uses of Amphetamine and Gammoxene.

5. What are amines? How they are classified? Write any two general methods of preparations of amines with one examples.

6. What are grignard reagents and dizonium salts? Explain with one examples.

7. How will you test the purity of the following compounds?

(a) Aspirin

(b) Vanillin.

8. Write the structure and uses of the following compounds.

(a) Hexamine

(b) Salicylic acid

(c) Glyceryl trinitrate

(d) Citric acid

(e) Sodium lauryl sulphate.

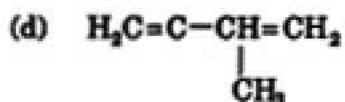
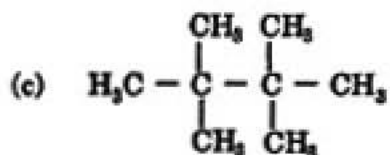
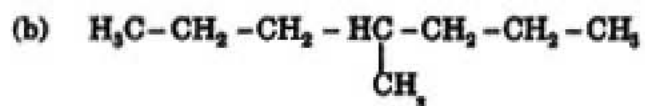
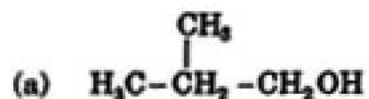
FEBRUARY - 2006

9. What are cyanohydrins? Write the properties of cyanohydrine.

10. Explain the following terms :

- (a) Inductive effect
- (b) Mesomeric effect
- (c) Resonance effect.

11. Write the IUPAC name for the following compounds.



12. What are  $\text{SN}_1$  and  $\text{SN}_2$  reactions? And explain the mechanism of  $\text{SN}_2$  reaction?

AUGUST - 2006

[KP 702]

Sub. Code : 4162

First Year B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Essay on : (2 × 20 = 40)

Answer any TWO questions.

1. What is a grignard reagent? How is it prepared? Write one suitable example explain how we can prepare a primary alcohol, secondary alcohol, alkane and a carboxylic acid with a grignard reagent.

2. Explain what is aromatic character. State and explain Hukel's rule. With the help of a suitable explain what is resonance. Explain why conjugated dienes are more stable than compounds with isolated double bonds.

3. With the help of one suitable example explain Markovnikov's rule and peroxide effect. Give mechanism in each case.

4. Explain SN<sup>1</sup> and SN<sup>2</sup> reactions with the help of one suitable example each. Give the detailed mechanism and evidence in each case.

II. Short notes : (6 × 5 = 30)

Answer any SIX questions.

1. Give the test for purity and assay of ichthammol.
2. Define carbonium ion. With the help of one example explain the stability of carbonium ions.
3. With one example, explain Friedel Craft's alkylation of Benzene.
4. Explain Bayer's strain theory. What are its limitations?
5. Give the preparation and medicinal uses of Dichloramine-T.
6. Give the preparation along with mechanism of Iodoform.
7. With the help of one example explain E<sup>1</sup> reaction along with mechanism.
8. Give the preparation and uses of ethylchloride.

AUGUST - 2006

[KP 736]

Sub. Code : 4227

FIRST YEAR B.Pharm DEGREE EXAMINATION.

(Modified Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay :

(2 × 20 = 40)

Answer any TWO

1. What are the various factors influence the rate of reaction? Give the mechanism of  $SN^2$  reaction with the help of a suitable example. Explain the stereo chemistry of the reaction.

2. Define and classify the activating and deactivating groups. Discuss the theory of effect of the substituents on reactivity and orientation in electrophilic aromatic substitution reactions.

3. Discuss the preparation and synthetic utility of diazonium compounds

4. (a) Explain the mechanism of nitration of benzene.

(b) Explain Bayer's strain theory and its limitations

(c) Discuss the preparations of Grignard reagent and its use in the preparation of alkanes.

II. Short notes :

(6 × 5 = 30)

Answer any SIX questions.

1. Write in detail on resonance theory of benzene

2. Write the reactions given by aldehydes

3. Haworth synthesis for the preparation of naphthalene

4. Give the general methods of preparation of alcohols.

5. Explain Markovnikov's rule and Peroxide effect.

6. Describe the Sandmeyer and Gattermann reactions.

7. What are the tests to distinguish between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  amines.

8. Give the general reactions of carboxylic acids.



## FEBRUARY - 2007

2. Write any five important methods for the preparation of Phenols.
3. What is 'hydrogen bonding'? Classify with suitable examples for each.
4. Describe 'ozonolysis'. Describe the significance of this reaction in the structure elucidation of organic compounds.
5. Write assay method and uses of :
  - (a) Ethyl biscoumacetate
  - (b) Gamexene.
6. Define a 'Carbocation' Mention its types with examples. Add a note on the mechanism for Electrophilic substitution of Benzene.
7. Describe the merits and demerits of Bayer-Strain theory.
8. Classify amines with examples. Write the method of preparation, assay and medicinal use of Sulphanilamide.

FEBRUARY - 2007

[KQ 736]

Sub. Code : 4227

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Modified Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay :

(2 × 20 = 40)

Answer any TWO questions.

1. Write the preparations reactions and test for purity of Chloroform, Glycerol trinitrate and lactic acid.
2. Write the preparation reactions and IUPAC naming of cycloalkane and alcohol.
3. Give the general methods of preparation and reactions of alkanes?
4. What is Poly aromatic compounds? Write the synthesis and properties of naphthalene triphenyl methane and phenanthrene?

II. Short notes :

(6 × 5 = 30)

Answer any SIX questions.

1. What is Kekule structure of benzene and write their resonance structure of benzene.
2. Write the preparation and test for purity of Chloramine and Acetamilide.
3. What is Diels? Alder reaction explain with examples.
4. What is Diazonium reaction? Explain with general reaction.
5. What is meant by IUPAC nomenclature? Write the structure and Name them according to IUPAC
  - (a) Formic acid
  - (b) Acetaldehyde
  - (c) Acetone
  - (d) Acetylene
6. Give the general methods of preparation of carboxylic acid and Aldehydes.
7. Explain Dipole moment.
8. Write about Resonance effect.



August-2007

[KR 702]

Sub. Code : 4162

(For candidates admitted upto 2003-04)

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer any TWO questions.

- I. Long Essay : (2 × 15 = 30)
1. Explain S<sub>N</sub>2 and S<sub>N</sub>1 reactions with emphasis on
- (a) Mechanism
  - (b) Nucleophile
  - (c) Stereochemistry.

2. Explain the electrophilic addition mechanism involved in the following :

(a) Addition of Hydrogen bromide to propylene

(b) Addition of Hydrogen bromide to 1, 3 - butadiene.

3. Explain the synthetic utility of acetoacetic ester and diazonium salts.

4. Explain the following with mechanisms :

(a) Hoffmann degradation of amides

(b) Cannizzaro and crossed Cannizzaro reactions.

Answer any EIGHT questions. -

II. Short notes : (8 × 5 = 40)

1. What are carbocations? Explain the structure and stability of carbocations.

2. Write the reactions of aldehydes.

3. Explain the basicity of amines.

4. Write the mechanism of chlorination of methane and Kolbe's reaction.

5. Explain Bayer's strain theory.

6. Explain Keto-Enol tautomerism with examples.

7. What is Friedel-Craft's alkylation? Write its mechanism.

8. Write the method of preparation and uses of Chloramine-T and Aspirin.

9. Explain Tautomerism with example.

10. Write three reactions of Benzene.



2. (a) Discuss the mechanism involved in nucleophilic aromatic substitution reaction with suitable example. (9)

(b) Explain the mechanism of Friedel crafts alkylation with suitable examples. (6)

3. (a) What is Benzyne? Write electrophilic and nucleophilic substitution reaction for benzyne. (9)

(b) Outline some methods of resolution of racemic mixture. (6)

4. (a) 1, 2-Cisdimethyl cyclohexane is more stable than trans. Explain with suitable confirmation. (6)

(b) Give the nomenclature, preparation and reactions of alkenes. (9)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. Explain the method of preparation and uses of the following :

(a) Iodoform

(b) Sodium Lauryl Sulphate.

2. What are molecular orbitals? Explain HOMO and LUMO with respect to 1, 3 butadiene.

3. How do alkyl halides differ from aryl halides? Describe the general method of preparation of alkyl halides.

4. Explain 1, 2 and 1, 4 addition of Grignard reagent.

5. Give the mechanism of Haloform reaction and Cannizzaro reaction.

6. Explain briefly hydrogen bonding.

7. Explain the acidic character of succinamide.

8. Outline the general method of synthesis of amines.

9. Define tautomerism with suitable example.

10. Give one synthesis of Phenanthrene and Diphenyl ethane.

11. Write note on Alpha-Beta unsaturated carbonyl compounds.

12. Mention any three methods of synthesizing alcohols and how they are classified.

February-2008

[KS 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Q.P.Code : 564162

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Essay on :

(2 × 15 = 30)

Answer any TWO questions.

1. (a) Explain Diels-Alder reaction with suitable example and give the application of it in organic synthesis. (10)
- (b) Outline the test for purity assay and medicinal uses of saccharin. (5)

2. (a) Discuss the mechanism involved in nucleophilic aromatic substitution reaction with suitable example. (10)

(b) Explain Bayer strain theory in salicyclic compounds. (5)

3. (a) Give the nomenclature, preparation and reactions of alkenes. (10)

(b) What are molecular orbitals? Explain HOMO and LUMO with respect to 1, 3 Butadiene. (5)

4. (a) How does alkyl halides differ from aryl halides? Describe the general method of preparation of alkyl halides. (10)

(b) Explain the test for purity and medicinal uses of chloroform. (5)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

5. (a) Write the synthesis and assay of benzyl benzoate.

(b) Why phenols are acidic? Give reasons.

(c) Describe the mechanism of free radical reaction with an example.

(d) Explain the sulphonation reaction of benzene.

(e) Discuss the concept of acidity and the effect of substituents on acidity.

(f) Write any three methods of preparing alcohols.

(g) Outline the properties and uses of urea.

(h) Explain the following reactions.

(i) Gattermann aldehyde synthesis.

(ii) Rosenmund reduction.

(i) What are anesthetic ethers? Explain the Williamson's synthesis of ethers.

(j) Explain the use of aceto acetic acid ester in the synthesis of ketones.

February-2008

**[KS 736]**

**Sub. Code : 4227**

(For Candidates admitted from 2004–05 onwards)

**FIRST YEAR B.Pharm. DEGREE EXAMINATION.**

(Modified Regulations)

**Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY**

**Q.P. Code : 564227**

**Time : Three hours**

**Maximum : 90 marks**

**Theory : Two hours and  
forty minutes**

**Theory : 70 marks**

**M.C.Q. : Twenty minutes**

**M.C.Q. : 20 marks**

**I. Long Essay :**

**(2 × 15 = 30)**

**Answer any TWO questions.**

**Each question carries 15 marks.**

1. (a) Explain the formation of bonding, antibonding and non bonding orbitals. (5)
- (b) Explain the phenomenon of tetrahedral and trigonal hybridisation with suitable examples. (10)

2. (a) Give the nomenclature, preparation and reactions of cycloalkanes. (9)

(b) Add a note on addition reactions of conjugated dienes. (6)

3. (a) What is Markovnikoff's rule? Outline the mechanism that follows the markovnikoff's rule with suitable reaction/examples. (9)

(b) What is Ozonolysis? Write example to demonstrate the importance of ozonolysis in structure elucidation. (6)

4. (a) Explain the Unimolecular and Bimolecular mechanism and its stereochemistry of substitution reactions of alkyl halides. (10)

(b) Explain the photohalogenation and thermal halogenation of alkanes. (5)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. Explain the reactions given by all three classes of amines.

2. Explain the preparation, test for purity and pharmaceutical uses of mephenesin.

3. What are Grignard reagents? Explain the method of preparation of primary, secondary and tertiary alcohols from Grignard reagent with suitable examples.

4. What are carbocations? Explain its application in organic synthesis.

5. Explain the property of geometrical isomerism exhibited by alkenes.

6. Outline the preparation, test for purity and medicinal uses of amphetamine.

7. What are 1 and 2 naphthols? Outline the method of preparation of them.

8. Explain the following reactions :

(a) Sandmeyer reaction.

(b) Gattermann reaction.

9. Explain the types of bond dissociation energy with suitable examples.

10. Explain the role of inductive effect and mesomeric effect in electron displacements of molecule.



August 2008

[KT 702]

Sub. Code : 4162

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Q.P. Code : 564162

Time : Three hours

Maximum : 90 marks

Answer any TWO questions.

I. Long Essay : (2 × 20 = 40)

1. (a) What is Kekulé structure of benzene and write their resonance structure of Benzene. (7)

(b) Write the synthesis and properties of naphthalene and phenanthrene. (8)

(c) What is Diazonium reaction? Explain the general reactions. (5)

2. (a) What are alkyl halides? How will you prepare alkyl halides and aryl alkyl halides? (10)

(b) What are polar covalent bonds, Dipole moment and bond dissociation energy? Explain it. (10)

## August 2008

3. (a) What are the various factors influence the rate of reaction? (4)

(b) Give the mechanism of SN<sup>2</sup> reaction with the help of a suitable example. (8)

(c) Explain the stereo chemistry of the SN<sup>2</sup> reaction. (8)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

1. Explain the Markovnikov's rule and peroxide effect.

2. What are the tests to distinguish between 1°, 2° and 3° amines?

3. Explain the Bayer's strain theory and its limitations.

4. Explain any three methods of preparation of alcohols.

5. What is Diel's Alder reaction? Explain with example.

6. Write the preparations, reactions and tests for purity of gamaxene and chloramine.

7. Write a note on carbonium ion theory.

8. Why amines are basic? Give reasons.

9. Write briefly on quaternary ammonium salts and their characteristic reactions.

10. Write the assay and medicinal uses of sulphanilamide and mustine hydrochloride.

III. Short answers : (5 × 2 = 10)

Answer any FIVE questions.

1. Define and classify carboxylic acids and esters.

2. What is meant by IUPAC nomenclature? Write the structure and name them according to IUPAC.

(a) Acetylene

(b) Chloroform

(c) Hexamine.

3. Mention the uses of Grignard reagent in the preparation of alkanes.

4. Give the test for purity and assay of I Cthammol.

5. Give reason for the sigma bond is stronger than "pi" bond.

6. Define ozonolysis with example.

7. Write two methods for the preparation of phenols.

August 2008

[KT 736]

Sub. Code : 4227

(For Candidates admitted from 2004–05 onwards)

FIRST YEAR B.Pharm. DEGREE EXAMINATION.

(Modified Regulations)

Paper II — PHARMACEUTICAL ORGANIC  
CHEMISTRY

Q.P. Code : 564227

Time : Three hours

Maximum : 90 marks

I. Long Essay : (2 × 20 = 40)

Answer any TWO questions.

1. (a) Discuss  $SN_1$  and  $SN_2$  reaction with special reference to mechanism, reactivity and stereochemistry.

(b) What are the free radicals? Explain the reaction with suitable examples. (15 + 5 = 20)

2. (a) Describe the mechanism of diazotisation reaction and explain the uses of diazonium salts in the synthesis of organic compounds. Give examples.

(b) Explain Huckel rule taking suitable examples. (15 + 5 = 20)

3. (a) What are organ metallic compounds? How is methyl magnesium iodide prepared?

(b) Describe the synthesis, assay and use of

(i) Dimercaprol

(ii) Iodoform

(iii) Paraldehyde.

(c) Discuss the structure and stability of carbonium ions. (5 + 10 + 5 = 20)

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions only.

1. Classify alcohols giving examples. Give three reactions of alcohols.

2. Explain the mechanism of electrophilic addition reaction across a double bond.

3. Explain why the boiling point of ethyl alcohol is higher than that of diethyl ether though they have the same molecular weight.

4. State and explain Bayer's strain theory.

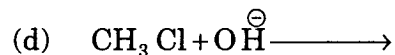
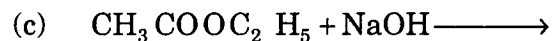
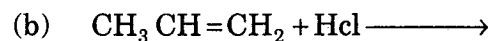
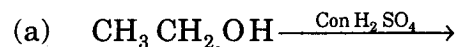
5. Write a note on the stability of conjugated dienes.

6. Give any two general methods of preparation of alkenes with examples.

## August 2008

7. Describe the tests to distinguish between 1°, 2° and 3° amines.

8. Predict the product of the following reaction and given their structures.



9. Write any four methods for the preparation of carboxylic acids.

10. Write the test for purity and assay of the following compounds.  $(2\frac{1}{2} + 2\frac{1}{2} = 5)$

(a) Ichthamol.

(b) Liquid paraffin.

III. Short answers.  $(5 \times 2 = 10)$

Answer any FIVE questions only.

1. Write a note on geometrical isomerism.

2. Compare the basicity ammonia, methyl amine and aniline.

3. Wolf Kishner Reduction.

4. Give the test for purity and assay of Benzoic acid.

5. Give the utility of acetoacetic esters in organic synthesis.

6. What happens when (given examples)

(a) Ethylene reacts with alkaline  $\text{KMnO}_4$ .

(b) Acetaldehyde reacts with phenylhydrazine?

7. Explain why acetone is less reactive than formaldehyde towards a nucleophilic reagent.

February 2009

[KU 702]

Sub. Code: 4162

**FIRST B.PHARM. DEGREE EXAMINATION**

**(Revised Regulations)**

**Candidates Admitted upto 2003-04**

**Paper II – PHARMACEUTICAL ORGANIC CHEMISTRY**

***Q.P. Code : 564162***

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions : Answer any TWO questions (2 x 20 = 40)**

1. a) Explain SN1 and SN2 reactions of alkyl halides and what are the factors influencing the mechanism. (7)  
b) Distinguish the features of the two SN1 and SN2 mechanism. (7)  
c) Write note about Elimination Vs substitution. (6)
2. a) Enumerate and discuss various methods available for the preparation of Alkenes. (10)  
b) Give the properties of alkenes. (10)
3. a) What are amines? How are they classified? Discuss the general methods of preparations and properties of Aliphatic amines. (15)  
b) Write five distinguishing tests between primary, secondary and tertiary amines. (5)

**II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)**

1. Explain aldol condensation reaction of aldehyde and ketones.
2. Define diazotization: Write the method of preparation of Benzene diazonium chloride.
3. Write the method of preparation of ethers by Williamson's synthesis.
4. Give a brief account of large scale preparation of acetic acid.
5. Write any two methods of preparations of salicylic acid and its uses.
6. Write the preparation, properties and uses of Benzyl alcohol.
7. How chloroform is prepared industrially? Write the properties, analytical test and uses of chloroform.
8. Explain Friedel – Crafts reaction with mechanism and its limitations.
9. What is hyperconjugation? Explain it and the usefulness of this concept.
10. Explain Hydrogenbond and the properties related with it.

**III. Short Answers: Answer any FIVE questions**

**(5 x 2 = 10)**

1. Explain Bond fission.
2. Write the preparation of lactic acid from acetaldehyde.
3. Why aldehydes and ketones do not undergo nucleophilic substitution?.
4. Explain schiemann reaction: What is its utility?
5. Give IUPAC name of the following compounds.
  - a)  $\text{CH}_3 - \text{C} = \text{C} - \text{CH}_3$ ,
  - b)  $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
  - c)  $\text{CH}_3 - \underset{\text{BR}}{\text{CH}} - \underset{\text{CL}}{\text{CH}} - \text{CH}_2\text{OH}$ .
  - d)  $\text{H} - \text{CHO}$
6. Write structures of the following compounds: Whose IUPAC names are given under.
  - a) 1, 5 – hexadiene.
  - b) 4 – methyl – 2 - pentyne.
  - c) 1 - methyl – 2 – pentene - 1-01
  - d) 2 – Brome butanoyl chloride.
7. How will you convert primary alcohol into secondary alcohol? – Explain.

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February 2010

[KW 702]

Sub. Code: 4162

**FIRST B.PHARM. DEGREE EXAMINATION**

**(ReRevised Regulations)**

**Candidates Admitted upto 2003-04**

**Paper II – PHARMACEUTICAL ORGANIC CHEMISTRY**

**Q.P. Code : 564162**

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions : Answer any TWO questions (2 x 20 = 40)**

- a) Explain the E<sub>2</sub> mechanism along with evidences. (12)

b) Write in detail about hydrogen bonding by giving examples. (8)
- a) Explain the aromatic character of Benzene. (8)

b) What are the electrophilic substitution reactions of benzene? (12)
- a) Explain the mechanism of free radical substitution reactions with examples. (10)

b) Write the general methods of preparation of alkyl halides and aryl halides. (10)

**II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)**

1. What are the different types of alcohols? Explain how to distinguish between them.

2. Give the IUPAC names of the following
  - a) 
$$\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3\text{CH}_2 - \text{C} - \text{CHCH}_3 \\ | \quad | \\ \text{Cl} \quad \text{Cl} \end{array}$$
  - b) 
$$\begin{array}{c} \text{CH}_3 \quad \quad \text{CH}_3 \\ | \quad \quad \quad | \\ \text{CH}_3\text{CH}_2\text{CHCH}_2\text{CH} - \text{CH} - \text{CH}_3 \\ | \\ \text{CH}_2\text{CH}_2\text{CH}_3 \end{array}$$
  - c)  $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{CH}_3$
  - d) 
$$\begin{array}{c} \text{CH}_3\text{CH}_2\text{CHCH}_2\text{CHCH}_2\text{CH}_3 \\ | \quad \quad | \\ \text{CH}_3 \quad \quad \text{C}_2\text{H}_5 \end{array}$$
  - e)  $(\text{CH}_3)_2\text{CClCH}(\text{CH}_3)_2$

3. Explain markownikoff's rule and peroxide effect.
4. Give the preparation, test for purity and medicinal uses of the following:
  - a) Dicophane.
  - b) Aspirin.

5. Compare and contrast aldol condensation with Cannizzaro reaction.
6. Give the structural formula of :
  - a) 2,2,3,3 – tetramethylpentane.
  - b) 3-ethyl-2-methyl octane.
  - c) 1,2-dibromo-3-methylpentane
  - d) 4-ethyl-2,4-dimethylheptane.
  - e) 3-chloro-2-methylbutane.
7. Explain  $S_N2$  reactions with examples.
8. What are the different types of bonds? Explain with examples.
9. Write about the basicity of amines with reasons.
10. What are Grignard reagents. Give the preparation and coupling reactions of Grignard reagents.

**III. Short Answers:      Answer any FIVE questions      (5 x 2 = 10)**

1. What are the different types of tautomerism. Explain any one.
2. Explain the Saytzeff rule with example.
3. What is Bayer's strain theory? Explain.
4. Write the Diels Alder reaction with example.
5. Write the synthetic utility of diazonium salts.
6. Write short notes on the following:
  - a) Inductive effect.
  - b) Dipole moment.
7. What are carbocations. Give any one mechanism involving carbocations.

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