

010

FIRST B.Pharm. EXAMINATION, APRIL 1990

PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

Answer any SIX questions of which Questions 1 and 5 are compulsory.

1. (a) Explain the concept of resonance, taking benzene as example. Give its molecular orbital picture.
(b) What is Huckel $4n+2$ rule? Explain with examples.
(c) Briefly describe the mechanism of nitration of benzene ring. (18 marks)
2. (a) Describe Sp^3 hybridization.
(b) Define Pauli exclusion principle. What is hydrogen bond?
(c) What is Ichthammol? Outline the principle of its assay. (16 marks)
3. (a) Explain with examples Markovnikov rule and its mechanism.
(b) What are the general methods of preparation of alkenes. Give examples and explain the mechanism of any one method. (16 marks)

4. Briefly describe the different reactions of aldehydes and ketones. (16 marks)
5. Explain why (any four):
(a) Alkyl halides readily undergo nucleophilic substitution but not aryl halides.
(b) Halogens are deactivating and yet ortho, para directing in electrophilic substitution.
(c) Tertiary alcohols can be dehydrated easily.
(d) Aliphatic amines are more basic than ammonia.
(e) Phenols are more acidic than alcohols. (18 marks)
6. (a) What are the different methods for the preparation of alcohols?
(b) Give an account of the reactions of alcohols. (16 marks)
7. (a) Give the structure and preparation of paraldehyde, hexamine and chloral hydrate.
(b) Discuss the synthetic utility of acetoacetic ester. (16 marks)
8. (a) Explain the reaction of nitrous acid with primary, secondary and tertiary aromatic amines.
(b) Outline the preparation, medicinal uses and assay of amphetamine and sulphanilamide. (16 marks)

OCTOBER - 1990

010

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1990.

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours.

Maximum : 100 marks.

SIX questions to be answered.

Questions No. 1 and 5 are compulsory

Of the remaining questions answer any FOUR.

1. What are Alcohols? How do they differ from phenols? Give an account of preparation and properties of alcohols. (18 marks)

2. (a) What are Elimination reactions? Briefly describe E_1 and E_2 reactions.

(b) What are the important electrophilic substitution reactions which may be carried out with benzene? (16 marks)

3. Give the preparation and assay of any four:

(a) Aspirin.

(b) Sodium amino salicylate.

(c) Paraldehyde.

(d) Sulphanilamide.

(e) Amphetamine.

(16 marks)

4. Discuss the preparation and synthetic utility of diazonium compounds. (16 marks)

5. Give the general methods of preparation and reactions of carboxylic acids. How is acidity influenced by substituents? (18 marks)

6. Write short notes on any four:

(a) S_N2 reaction.

(b) Hydrogen bond.

(c) Ozonolysis.

(d) Bayer strain theory.

(e) Diel-Alder reaction. (16 marks)

7. (a) Explain the nucleophilic addition reactions of aldehydes and ketones.

(b) Discuss the stability of carbonium ions. (16 marks)

8. (a) Give the synthetic utility of malon ester.

(b) Explain briefly various reactions of phenols. (16 marks)

APRIL - 1991

035

FIRST B. PHARM. DEGREE EXAMINATION, APRIL 1991.

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time: Three hours.

Maximum: 100 marks.

SIX questions to be answered.

Question number 1 and 2 are compulsory.

Answer any FOUR from the remaining questions.

1. (a) What is Sp^3 , Sp^2 and Sp hybridisation? Explain with examples.

(b) Write three important reactions of $-C-C-$ bond, giving one example for each.

(c) Write briefly on keto-enol tautomerism.

(8+6+4=18 marks)

2. (a) Discuss the mechanism of electrophilic substitution reactions involved in sulphonation, nitration and halogenation of benzene.

(b) Classify alcohols with suitable examples. How do you distinguish primary, secondary, tertiary alcohols? Why do alcohols show higher boiling point than ethers?

(9+9=18 marks)

3. Write briefly on any *four* of the following :
(4×4=16 marks)
- Cannizaros reaction
 - Bayer's strain theory
 - Kolbe's synthesis
 - Pinacol-pinacolone rearrangement
 - Claisen condensation
 - Mechanism of esterification.
4. Give the preparation and assay for any *four* of the following :
(4×4=16 marks)
- Resorcinol
 - Trichloro acetic acid
 - Chloral hydrate
 - Methyl salicylate
 - Sulphanilamide
 - Phenacetin.
5. (a) Give any three methods of preparation and three reactions of carboxylic acids.
- (b) What are phenols ? Classify phenols with suitable examples. Add a note on acidity of phenols.
- (c) Give any two methods of preparation and three chemical reactions of benzaldehyde. (6+5+5=16 marks)

6. (a) Give the classification, methods of preparation and properties of aliphatic amines. Using nitrous acid how do you distinguish three types of amines ?
- (b) Explain the following with suitable examples :
(i) Dipole moment
(ii) Hydrogen Bond
(iii) Bond dissociation energy. (7+9=16 marks)
7. (a) What is esterification ? Give a method of preparation and uses of malonic ester.
- (b) What are aldehydes and ketones ? How can they be distinguished ? Give suitable reactions.
- (c) Explain the mechanism of dehydrohalogenation of an alkyl halide. (6+6+4=16 marks)
8. (a) What are free radicals ? Explain the free radical mechanism of chlorination and pyrolysis of alkanes.
- (b) Discuss the mechanism and stereochemistry of S_N^1 and S_N^2 reactions. (8+8=16 marks)

APRIL - 1991

035A

FIRST B.PHARM. DEGREE EXAMINATION, APRIL 1991.

(New Regulations)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Two and a half hours. Maximum : 60 marks.

Answer Section A and Section B in separate Answer Books.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

All questions carry equal marks.

1. (a) Give the preparation and properties of phenols. Name some useful phenols Give their structure and uses.
 - (b) How are diazonium compounds prepared. Give their synthetic uses.
2. Explain the synthesis, assay and uses of the following :
 - (a) Chloral hydrate.
 - (b) Dimercaprol.
 - (c) Methyl salicylate.
3. Give two examples each for (a) addition reactions and (b) condensation reactions of the carbonyl group. Account for the difference in the reactivity of the carbonyl group in (i) acids (ii) aldehydes (iii) ketones and (iv) esters.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

All questions carry equal marks.

4. Give the structural formulae for the following :

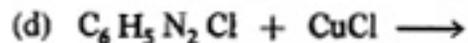
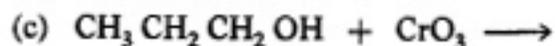
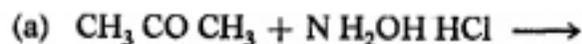
- (a) 3-pentanone.
- (b) 3-chloro pentanal.
- (c) Dimethyl amine.
- (d) Iso propyl alcohol.
- (e) Salicylic acid.

5. Draw and name the six aliphatic isomers of the nucleocarbon formulae $C_4H_{10}O$.

6. Give the synthesis of benzyl alcohol from benzene.

7. Describe the preparation of cinnamaldehyde and benzophenone.

8. Complete the following equations :



9. How are the following converted ?

- (a) Benzene to toluene.
- (b) Chlorobenzene to aniline.

10. Explain why :

(a) O-Nitrophenol is steam volatile while P-Nitrophenol is not.

(b) Acetaldehyde undergoes alcohol condensation when treated with aqueous sodium hydroxide while benzaldehyde under similar conditions undergoes cannizzaro reaction.

11. Suggest reasons for the following :

(a) Alkenes undergo electrophilic addition whereas carbonyl compounds undergo nucleophilic addition.

(b) Ethanol is not useful as solvent in the Grignard reaction of ethyl iodide with acetone.

OCTOBER - 1991

035

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1991.

Paper II -- PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

SIX questions to be answered.

Question No. 1 and 2 are compulsory.

From the remaining Questions answer any FOUR.

1. (a) Discuss the formation and stability of carbonium ion.
(b) Classify amines with suitable examples. Give the preparation of aniline. Starting from aniline how do you prepare sulphanilamide?
(c) Compare the basicity of ammonia, methyl amine and aniline. (7+7+4)
2. (a) Define and classify alcohols with suitable examples.
(b) What is a nucleophile? Explain the mechanism of nucleophilic substitution with suitable examples.
(c) How is glycerol synthesised on large scale? Add a note on its uses. (4+7+7)
3. (a) What are aldehydes and ketones? Write any three methods of preparation and three important reactions for each of them.
(b) What are conjugated dienes? Explain the formation of 1 : 4 addition products in dienes. (10 + 6)

4. Give the preparation and assay of any FOUR of the following
(4 x 4)

- (a) Chlorbutol
- (b) Benzyl Benzoate
- (c) Saccharin
- (d) Salicylic acid
- (e) Dimercaprol
- (f) Dicophane.

5. Write short notes on any FOUR of the following giving mechanism of reaction.
(4 x 4)

- (a) Friedel Craft's reaction.
- (b) Perkins reaction.
- (c) Wurtz synthesis.
- (d) Aldol condensation.
- (e) Reimer Tiemann reaction.
- (f) Nitration in aromatic ring.

6. (a) Give the preparation and synthetic applications of gignard's reagent.

(b) Give the preparation of aceto acetic ester and discuss its importance in the synthesis of organic compounds.
(8 + 8)

7. (a) What are alkyl halides? Give their methods of preparation and reactions.

(b) Explain Markownikoff's rule and peroxide effect giving examples.
(8 + 8)

8. (a) What is diazotisation reaction. Discuss important synthetic uses of diazonium compounds.

(b) What is resonance? How the concept of resonance is applied to explain the aromatic character of Benzene?
(8 + 8)

OCTOBER - 1991

035A

FIRST B.Pharm. DEGREE EXAMINATION, OCTOBER 1991.

(New Regulations)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Two and a half hours. Maximum : 60 marks.

Answer Section A and Section B in separate answer books.

SECTION A — (30 marks)

Answer any two only : (2×15=30 marks)

- (a) Classify amines. Discuss the properties of amines.

(b) How do you account for the difference in the reactivity of an amine group ($-NH_2$) attached to (i) an alkyl group (ii) an aromatic nucleus (iii) carboxyl group.
- (a) What is Grignard reagent? How is it prepared?

(b) Give an example of the use of Grignard reagent in the preparation of (i) an ether, (ii) a secondary alcohol, (iii) a ketone and (iv) a primary amine.
- (a) Discuss Electrophilic aromatic substitution and explain the nuclearised of Nitration in detail.

(b) How do you differentiate primary, secondary and tertiary alcohols.

4. Explain the preparation, assay and uses of the following :

- (a) Mephenesin,
- (b) Citric acid,
- (c) Sodium amino salicylate.

SECTION B — (30 marks)

Answer any six in brief : (6×5=30 marks)

1. Explain :

- (a) Bayer strain theory.
- (b) Markownikoff's rule.

2. Predict the products of the following reactions and give their structures :

- (a) $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{CONC. H}_2\text{SO}_4}$
- (b) $\text{CH}_3\text{CH}=\text{CH}_2 + \text{HCl} \longrightarrow$
- (c) $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \longrightarrow$
- (d) $\text{CH}_3\text{Cl} + \text{OH}^\ominus \longrightarrow$

3. Suggest a scheme and reagents to the preparation to the following from aniline :

- (a) Benzoic acid.
- (b) Benzanilide.

4. What happens when (give examples)

- (a) Benzene is treated with acetyl chloride and anhydrous AlCl_3 .
- (b) Ethylene reacts with alkaline KMnO_4 .
- (c) Acetaldehyde reacts with Phenylhydrazine.

5. Explain the following :

- (a) Treatment of alkyl halides with aqueous alkali gives alcohol, while alcoholic alkali gives olefines.
- (b) Ethanol is neutral, phenol is slightly acidic while acetic acid is quite acidic.

6. Give the preparations of and uses of

- (a) Acetyl salicylic acid.
- (b) Iodoform.

7. (a) How will you prepare diethyl ether from ethyl iodide ?

- (b) Give two methods of preparation of ethylene glycol.

8. Explain the following reactions :

- (a) Riemer-Tiemann reaction and
- (b) Friedel-Crafts reaction.

APRIL - 1993

[RS 529]

FIRST B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper II -- PHARMACEUTICAL ORGANIC CHEMISTRY

Time: Three hours

Maximum: 100 marks

Answer SIX questions.

Question Nos. 1 and 5 are compulsory.

1. (a) Give the chemistry of the test used for detection of sulphur and halogens in organic compounds.

(b) What is Markownikoff's Rule?

(c) Differentiate molecular orbitals and hybridization of orbitals in organic compound.

(d) Explain the electrophilic substitution with suitable example. (6 + 3 + 5 + 4 = 18)

2. (a) What is an ionic bond, covalent bond and coordinate bond. Explain with suitable examples.

(b) Explain in brief the structure of benzene.

(c) Explain the strength of Acetic acid, chloroacetic acid and trichloroacetic acid. (5 + 6 + 4 = 14)

3. (a) What is the action of primary, secondary and tertiary amines towards nitrous acid?

(b) Give three synthetic applications of aceto acetic ester.

(c) How is Dichloramine T prepared? (5 + 6 + 5 = 16)

4. (a) What are the general methods of preparation of aliphatic alcohols?

(b) What are the general properties of primary, secondary and tertiary alcohols? (8 + 8 = 16)

5. (a) How are the following compounds prepared? Give their uses.

(i) Sodium Lauryl Sulphate (ii) Dimethyl phthalate
(iii) Aspirin (iv) Tartaric Acid.

(b) How is Benzoic Acid assayed? (4 × 4 + 2 = 18)

6. Explain the mechanism of any FOUR of the following :

(a) E₁ Reaction.

(b) Nucleophilic substitution.

(c) Wurtz Reaction.

(d) Reformatsky Reaction. (4 × 4 = 16)

7. Write short notes on any FOUR :

(a) Soft paraffin.

(b) Peroxide effect.

(c) Ozonolysis.

(d) Reimer Tiemann Reaction.

(e) Kolbe's synthesis. (4 × 4 = 16)

8. (a) Give the synthesis of any THREE :

(i) Saccharin (ii) Benzyl benzoate

(iii) Ethyl Acetoacetate (iv) Dimercaprol (2 × 3 = 6)

(b) Give the formula and uses of any FIVE.

(i) Mustine hydrochloride.

(ii) Propylene glycol.

(iii) Oleic Acid.

(iv) O-cresol.

(v) Iodoform.

(vi) Glycerol. (5 × 2 = 10)

APRIL - 1993

[RS 534]

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours. Maximum : 90 marks.

Two and a half hours Section A and B : 60 marks.
for Sections A and B

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What are amines? Classify them with examples. Discuss the general methods of preparation of amines.
2. (a) Explain the structure of benzene with special reference to its aromaticity and stability.
(b) Explain the mechanism of aromatic substitution reaction.
3. Explain the synthesis, assay and uses of
 - (a) Dimercaprol
 - (b) Salicylic acid
 - (c) Sod. Lauryl sulfate.

4. Explain the mechanism of the following reactions:

- (a) Cope reaction
- (b) Wagner rearrangement.
- (c) Williamson's synthesis.
- (d) Gabriel's phthalimide synthesis.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the uses of diazonium salts in synthetic chemistry.
 6. How is ethanol manufactured?
 7. Explain how a primary, secondary and tertiary alcohol can be prepared by using grignard reagent.
 8. Alcohols are weaker acids than phenols but are stronger nucleophiles. Explain.
 9. How will you make the following conversions?
 - (a) Benzene into orthobromotoluene.
 - (b) Benzene into m-chloronitrobenzene.
 10. Explain dipole moment and its importance.
 11. Explain sp^3 hybridisation.
 12. Explain Bayer's strain theory.
 13. Write the general reaction of aldehydes.
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NOVEMBER - 1993

[PR147]

FIRST B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper II – PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

Answer SIX questions.

Question Nos. 1 and 5 are compulsory.

1. (a) How do you distinguish between aldehydes and ketones? Explain with reactions.

(b) Give the synthesis and medicinal uses of (i) Paraldehyde (ii) Sulphanilamide.

(c) Explain why sodium hydroxide reacts more easily with 2: 4 Dinitro chlorobenzene than with 3: 4 Dinitro chlorobenzene.
(8 + 4 + 6)

2. (a) What are Resonance and Resonance Energy? Explain using benzene as example.

(b) Explain with mechanism of alkylation and acylation on benzene.

(c) How do you increase the electron availability in benzene ring during substitution reaction.
(6 + 6 + 4)

NOVEMBER - 1993

[PR 147]

3. (a) Treatment of alkyl halides with aqueous alkali gives alcohol while alcoholic alkali gives olefins. Explain. (4)
- (b) Give the synthesis and medicinal uses of (i) Chloral hydrate (ii) Ethanol amine. (4)
- (c) What are Carbonium Ions and how are they classified? Discuss about their stability. Give examples of four typical reactions undergone by Carbonium Ions. (8)
4. (a) What are phenolic acids? Give examples. How is salicylic acid prepared? What are the medicinal uses of salicylic acid and its derivatives?
- (b) How are the following prepared? Give their uses (i) Paracetamol (ii) Mephesisin. (10 + 6)
5. (a) Give the methods of preparation of primary, secondary and tertiary amines.
- Give simple test to distinguish between them.
- (b) Explain anti-Markonikoff's addition.
- (c) What do you understand by hybridization. (10 + 4 + 4)
6. Explain the mechanism of any FOUR of the following reactions : (4 × 4 = 16)
- (a) SN^1 reaction.
- (b) Electrophilic addition.
- (c) Ozonolysis.
- (d) Riener Tiemann Reaction.
- (e) Haloform reaction.

[PR 147]

7. Write short notes on any FOUR : (4 × 4 = 16)
- (a) Hydrogen bonding.
- (b) Soft paraffin.
- (c) Diels Alder reaction.
- (d) Reaction of hypochlorous acid on olefins.
- (e) Hexamine.
8. (a) Give the synthesis of any THREE : (3 × 3 = 9)
- (i) Iodoform.
- (ii) Chlorobutol.
- (iii) Benzyl benzoate.
- (iv) Sodium amine salicylate.
- (v) Paraldehyde.
- (b) Give formulae and uses of any SEVEN : (1 × 7 = 7)
- (i) Glycerol.
- (ii) Cetosteryl alcohol.
- (iii) Benzyl alcohol.
- (iv) Acetamide.
- (v) Propylene glycol.
- (vi) Ethyl acetate.
- (vii) Acetone.
- (viii) Isopropyl alcohol.
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NOVEMBER - 1993

[PR 151]

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours
for Sections A and B

Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. With examples, explain the following type of reactions
 - (a) Nucleophilic substitution reactions.
 - (b) Elimination reactions.
 - (c) Free radical reactions.
2. What is molecular-orbital theory? Explain the structure of the following compounds with special reference to hybridisation of orbitals involved, bond lengths and bond angle
 - (a) Hydrogen molecule.
 - (b) Ethylene.
 - (c) Benzene.

3. Describe the synthesis, assay and uses of
 - (a) Sodium *p*-amino salicylate.
 - (b) Amphetamine.
 - (c) Salicylic acid.
4. (a) Explain Markonikoff's rule and peroxide effect.
(b) Write the reactions given by aldehydes only.
(c) How is Ethyl Alcohol produced commercially?

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain how a monocarboxylic acid can be produced using malonic esters.
6. Explain Bayer's strain theory.
7. Explain the mechanism of nitration in benzene ring.
8. How can you convert Benzene into *m*-phenylene diamine?
9. Nitro anilines are weaker bases than aniline. Explain.
10. How is Ethyl chloride prepared? Mention its uses.
11. Explain hydrogen bonding and its importance in the physico-chemical properties of compounds.
12. Explain Diels-alder reaction.
13. How will you convert Toluene into *p*-aminobenzoic acid?

ND 562 - NOVEMBER - 1994

(New Regulations)

**Paper II – PHARMACEUTICAL ORGANIC
CHEMISTRY**

Time : Three hours

Maximum : 90 marks

Two and a half hours

Section A and B : 60 marks

for Section A and B

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A – (2 × 15 = 30 marks)

Answer any TWO questions.

1. What are aldehydes? How do they differ from ketones? Give an account of preparation and properties of Aromatic Aldehydes.
2. Discuss S_N1 and S_N2 reactions with special reference to mechanism, reactivity and stereochemistry.
3. Describe the synthesis, assay and uses of the following :
 - (a) Acetanilide.
 - (b) Glyceryl trinitrate.
 - (c) Chloramine.
4. Discuss the preparation and synthetic utility of diazonium compounds.

Answer any SIX questions.

5. What are free radicals? Explain the reaction with suitable examples.
6. Explain mechanism of addition reaction in alkenes with reference to Markownikoff's rule and its exceptions.
7. Elimination reactions.
8. Orientation rules in disubstitution in Benzene ring.
9. What are phenols? Give examples with structures and uses.
10. Uses of Malonic ester in the synthesis of carboxylic acids.
11. Give commercial process for the production of rectified spirit.
12. Explain Cannizaro reaction with suitable examples.
13. Uses of Grignard reagent in the synthesis of organic compound.

NOVEMBER - 1994

[ND 566]

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 and B : 60 marks
for sec A and B

Answer Section A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION - A (2X15=30)

Answer any TWO Questions

1. Describe the mechanism of diazotisation reaction and explain the uses of diazonium salts in the synthesis of organic compounds. Give examples
2. What is molecular-orbital theory? Explain the structure of the following compounds with special reference to hybridisation of orbitals involved, bond length and bond angle
 - a) Hydrogen molecule
 - b) Ethylene
 - c) Benzene

3.
 - a) Explain the nucleophilic addition reactions of aldehydes and ketones
 - b) Discuss the stability of carbonium ions.
4. Describe the synthesis, assay and uses of
 - a) dichloramine T
 - b) Formaldehyde solution
 - c) phenol

SECTION - B (6X5=30)

Answer any SIX Questions

5. Explain Cannizaro reaction
6. How is Ethyl chloride prepared? Mention its uses.
7. Explain Bayer's strain theory.
8. Explain Markonikoff's rule and peroxide effect.
9. What are phenols? How are they classified? Give examples.
10. What is Ichthammol? How is it assayed?
11. Explain Diels-alder reaction.
12. Explain the mechanism of S_N1 reactions
13. Nitro anilines are weaker bases than aniline-
Explain _____

APRIL - 1995

[SB 565]

First B. Pharm Degree Examination

(New Regulations)

Paper II - PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks.

Two and a half hours Sections A and B : 60 Marks
for Section A and B

Answer Sections A and B in separate answer books

Answer Section C in separate answer sheet provided

SECTION—A

Answer any TWO questions

1. Explain the reaction mechanism of the following reactions.
 - a) Diel's - Alder reaction
 - b) Aldol condensation
 - c) Riemer - Tieman reaction (2×15=30)
2. Give the preparation and method of assay of any three of the following compounds
 - a) Methyl salicylate
 - b) Hexamine
 - c) Suffanilamide
 - d) Vanillin (3×5=15)
3.
 - a) Write the mechanism involved in the nitration of benzene
 - b) Compare the synthetic utility of friedel craft's alkylation reactions
 - c) Write briefly about Ozonolysis (4+7+4=15)
4.
 - a) How will you prepare Acetoacetic ester? Give any two pharmaceutical applications of acetoacetic ester synthesis
 - b) Explain the mechanism of any two of the following reactions
 - i) Kolbe synthesis
 - ii) Cannizaro reaction
 - iii) Hoffman rearrangement (7+4+4=15)

SECTION - B (6×5=30)

Answer any SIX questions

5. State and explain Bayer's strain theory
6. Explain SN² reaction mechanism with examples
7. What is Grignard's reagent? How is it synthesised? Using Grignard's reagent, how will you prepare primary and secondary alcohols
8. How will you convert benzene to toluene and Nitrobenzene to phenol
9. How will you prepare acetylene? Give any two typical reactions of acetylene
10.
 - a) Arrange the compounds, acetic acid, dichloroacetic acid, trichloroacetic acid in the order of increasing acidity and give reasons for your answer
 - b) Give one method for the assay of aspirin
11. Discuss the mechanism of a free radical reaction with examples
12.
 - i) Explain the following terms
 - a) Polarity of a bond
 - b) Molecular orbital
 - ii) Write a note on the stability of conjugated dienes
13.
 - a) Give any two general methods of preparations of alkenes with examples
 - b) Write about Iodoform test

APRIL - 1995

[SB 569]

FIRST B. Pharm DEGREE EXAMINATION
(Revised Regulations)

Paper II - PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks

Two and a half hours

for Section A and B Sec. A and B : 60 marks

Answer Sections A and B in separate answer books

Answer section C in separate answer sheet provided.

SECTION—A (2X15 = 30)

Answer any TWO questions

1. a) State and explain Markonikoff's rule and peroxide effect
b) Give any two general methods of preparation of acetylene
c) Write briefly about Ozonolysis (6+4+5)
2. a) With the help of suitable examples explain the mechanism involved in SN¹ and SN² reaction and compare them
b) State and explain Diel's—Alder reactions (10+5)
3. a) Explain the stability of benzene on the basis of resonance
b) Write in detail the mechanism of sulfonation of benzene
c) Give the assay and medicinal use of DICOPHANE and CHLORAMINE-T (4+4+7)
4. a) Give the synthesis of any two pharmaceutically important compounds using MALONIC ESTER.
b) Give the assay and medicinal use of the following compounds
i) Acetanilide
ii) Chlorbutol
iii) Aspirin (6+3+3+3)

SECTION—B

Answer any SIX questions.

5. Write a note on Bayer's strain theory
6. Give the mechanism of E' (Elimination') reaction with example
7. Compare the acidity of acetic acid, dichloroacetic acid and Trichloroacetic acid. Give reasons.
8. Give any two general methods of preparation of alcohols with examples. How will you distinguish between primary, secondary and tertiary alcohols.
9. Explain free radical reaction with example.
10. Give the synthetic applications of acetoacetic ester.
11. Write about CLEMENSON and WOLF-KIESHNER reduction with example
12. Mention the medicinal uses of CHLORAL HYDRATE and AMPHETAMINE.
13. Explain the uses of diazonium salts in the preparation of organic compounds with suitable examples.

NOVEMBER - 1995

MB 702

FIRST B.PHARM DEGREE EXAMINATION

(New Regulations)

Paper II - PHARMACEUTICAL ORGANIC CHEMISTRY

Time: Three hours

Max. Marks: 90

Two and a half an hour

for Sec. A and B

Sec. A and B : 60 marks

Answer Sections A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION - A

(2 X 15 = 30)

Answer any two Questions.

1. Explain the following reactions with examples
 - a). Free radical substitution reactions
 - b). Nucleophilic substitution reactions
 - c). Electrophilic substitution reactions
2. a) What is meant by Bayer's strain theory.
b) Discuss briefly the stability of cycloalkanes with examples.
3. Describe the synthesis, assay and uses of
 - a). Ichthammol
 - b). Trichloroethylene
 - c). Glyceryl trinitrate
4. a). Write the general methods of preparation of aliphatic amines
b). How will you prepare the following
 - i). Methyl amine from ethylamine
 - ii). Ethyl isocyanide from ethylamine
 - iii). Secondary amine from primary amine

SECTION - B (6X 5 = 30)

Answer any Six questions.

5. Explain Williamson's synthesis
6. Explain why toluene is more reactive than benzene towards nitration.
7. How are diazonium salts prepared. Give their uses.
8. Explain the mechanism of dehydro halogenation of an alkyl halide
9. Explain why acetone is less reactive than formaldehyde towards a nucleophilic reagent
10. Explain the reaction of phenol with chloroform and potassium hydroxide with equations.
11. Explain Hinsberg's method of separation of primary, secondary and tertiary amines from their mixtures.
12. Illustrate with equations the reaction of benzaldehyde with phenyl hydrazine.
13. Explain how Nitrobenzene is converted to acetanilide.

NOVEMBER - 1995

[MB 706]

First B. Pharm Degree Examination

(Revised Regulations)

Paper II - PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours Max : 90 marks

Two and a half hour Sec. A and B : 60 marks
for Sec. A and B

Answer Sections A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION—A (2×5=30)

Answer any Two questions

1. Define hybridization. Explain with examples the distribution of electrons in sp , sp^2 and sp^3 hybridization.
2. How is aniline prepared in the laboratory. What are its uses. Starting from aniline indicate how the following may be prepared
 - a) Phenol
 - b) Phenyl hydrazine
 - c) Iodobenzene
3.
 - a) How is cyclohexane prepared
 - b) Discuss the structural forms of cyclohexane and account for its stability.
4. Discuss the general methods of preparation of aldehydes. Give the important reactions of aldehydes with examples.

Answer any SIX questions

5. What is chloramine. Give its structure. How is it assayed.
6. Explain ozonolysis with the help of examples.
7. Discuss the mechanisms of aldol condensation.
8. Explain briefly the mechanism of free radical chain reaction.
9. Give the preparation and assay of tartaric acid
10. How is ethyl alcohol converted to acetic anhydride
11. Explain the basic nature of urea
12. Write short notes on the acidity of carboxylic acids.
13. Explain the mechanism of sulfonation of benzene.

APRIL - 1996

[AK 702]

Sub. Code : 4157

FIRST B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

Sections A and B : 60 marks

for Sec. A and B

1. Answer Sections A and B in separate answer books.
2. Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Discuss the methods of preparation of diethyl ether. What is its ~~use~~ use on
 - (a) Sodium
 - (b) Hydriodic acid
 - (c) Phosphorous Pentachloride.
2. Give the method of preparation of acetoacetic ester and malonic ester. Justify their importance in synthetic organic chemistry.
3. Describe the synthesis, assay and uses of
 - (a) Saccharin.
 - (b) Propylene glycol.
 - (c) Mephesisin.

[AK 702]

4. (a) Explain Huckel's rule for aromaticity with the help of examples.
 - (b) How is acetic acid prepared commercially?
 - (c) Give the reactions of alcohols.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Describe the method of conversion of chlorobenzene to aniline.
6. Explain the orientation of groups in disubstitutes of benzene.
7. How is methyl magnesium bromide prepared? Give its uses.
8. Explain the acidity of Phenols.
9. Discuss the mechanism of ozonolysis.
10. What is Diels-Alder reaction? Explain with examples.
11. Give the chemical tests by which acetaldehyde can be distinguished from acetone.
12. How is phenol converted to salicylaldehyde?
13. Describe the mechanism of Riemer-Tiemann reaction.

APRIL - 1996

[AK 706]

Sub. Code : 4162

FIRST B.Pharm. DEGREE EXAMINATION.

(Revised Regulation)

Paper II — PHARMACEUTICAL ORGANIC CHEMISTRY

Three hours
and a half hours
Sec. A and B

Maximum : 90 marks
Sections A and B : 60 marks
Sec. C : 30 marks

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What is resonance? Give the conditions necessary for resonance. Illustrate your answer with suitable examples.

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

(b) What happens when methyl magnesium iodide is treated with the following reagents and the product hydrolysed?

(i) Formaldehyde (ii) Ethylene oxide

(iii) Acetaldehyde (iv) Carbon dioxide.

(a) Explain the mechanism of S_N1 and S_N2 reactions.

(b) Discuss the structure and stability of carbonium ions.

Describe the synthesis, assay and uses of (a) Dimer

(b) Iodoform (c) Paraldehyde.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

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

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

7. Write the general mechanism of nucleophilic addition reactions of carbonyl compounds.

8. Explain why acetylene forms silver acetylide while ethylene does not.

9. How will you distinguish between aniline and N-methyl aniline?

10. Write short notes on Keto enol tautomerism.

11. Explain Sandmeyer reaction.

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

13. What is hybridization? Explain with the help of examples.

OCTOBER - 1997

[MS 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 Section A and B

Section A and B 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

- (a) Give the method of preparation of aliphatic alcohols.
(b) Give the assay and medicinal uses of the following :
(i) Mephenesin (ii) Chlorobutol.
- (a) State and explain Markonikoff's rule and peroxide effect.
(b) Give any two general methods of preparation of acetylene.
(c) Explain Ozonolysis.
- (a) Explain the mechanism of SN_1 and SN_2 reaction and give one example each.
(b) Give two methods to find out orientation and rules of orientation in Benzene.

[MS 702]

- (a) Give any three general methods of preparation of aldehydes and ketones.
(b) Write any two reactions common to aldehydes and ketones.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

- Explain free radical reaction with one example.
- Give any two syntheses using aceto acetic ester.
- Write any two syntheses involving diazonium salts.
- Give any two general methods of preparation of acetylene.
- Explain Diels-Alder reactions.
- Write the preparation of three classes of amines using Hofmann's method.
- Explain alcoholysis and acidolysis in esters.
- Give one method of preparation and assay of Hexyl resorcinol.
- Explain co-valent bond and Polar-covalent bond.

APRIL - 1998

[SV 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 Sec. A & Sec. B : 60 marks

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

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Write the method of preparation of
 - (i) Vanillin
 - (ii) Formaldehyde solutions.(b) Give the assay and medicinal uses of
 - (i) Hexamine
 - (ii) Chloral hydrate.
2. (a) Explain the mechanism of SN_2 reaction.
(b) Write the method of preparation and reactions of Acetylene.
3. (a) Explain Wurtz synthesis.
(b) Explain Diels alder reaction.
4. (a) Explain Riemeier-Tiemann reaction.
(b) Explain Alcoholysis in esters.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain free radical reaction and bond dissociation energy.
6. Explain Markovnikov's rule and peroxide effect.
7. Explain Diazotisation reactions.
8. Write the preparation and assay of Amphetamine.
9. Write the preparation and uses of Dimercaprol and Glycerol trinitrate.
10. Explain Electrophilic aromatic substitution with examples.
11. Explain Williamson's synthesis.
12. Write the preparations of
 - (a) Chloroform
 - (b) Ethyl chloride.
13. Write the method of preparations of Amines.

APRIL - 1999

[SG 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 Sec. A & Sec. B : 60 marks

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

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Discuss the structure of benzene and explain its stability. (6)
- (b) What are aldehydes and ketones? Outline briefly their methods of preparation. How will you distinguish them from each other? (9)
2. (a) Give the reaction, mechanism and orientation of halogenation of alkenes. (6)
- (b) Discuss the addition reactions of conjugated dienes. (4)
- (c) Give the preparation and assay on gamaxene. (5)

APRIL - 1999

3. (a) What is hybridisation in organic chemistry? Explain with examples various types of hybridisation.

(8)

(b) Give an account of the synthetic uses of Aceto acetic ester.

(7)

4. (a) Explain the acidity of carboxylic acids.

(4)

(b) Classify amines citing examples for each class from both aliphatic and aromatic compounds. How they are distinguished from each other?

(7)

(c) Give the preparation and medicinal uses of sulpha-nilamide.

(4)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Discuss the acidity of phenols.
6. Give any two synthesis of ether.
7. Write short notes on atomic orbital.
8. Write notes on tautomerism.
9. Explain and differentiate with examples SN_1 and SN_2 mechanism.

10. Explain why toluene is more reactive than benzene towards nitration.

11. Explain Markoni Kov's rule and anti Markoni Kov's rule with examples.

12. Give the IUPAC names of Acetaldehyde and Propionic acid.

13. Write short notes on Bayer strain theory.

OCTOBER - 1999

[KA 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 Sec. A & Sec. B : 60 marks
for Sec. A and Sec. B Section C : 30 marks

Answer Sections A and B in separate Answer Books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Describe the synthesis, assay and uses of
 - (a) Chloral hydrate
 - (b) Aspirin
 - (c) Propylene glycol. (3 × 5 = 15)
2. (a) Briefly discuss the synthetic uses of diazonium salts. (8)
(b) Give an account of the synthetic uses of malonic ester. (7)
3. (a) Discuss the basicity of amines. (5)
(b) Give the preparation and assay of tartaric acid. (5)

OCTOBER - 1999

- (c) Give the synthesis of aryl halides. (5)
4. (a) Explain with four examples the electrophilic aromatic substitution. (5)
- (b) What is peroxide effect? Discuss the mechanism of peroxide effect. (5)
- (c) Give any three important reactions of alkynes. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain ozonolysis with the help of examples.
6. Give the mechanism of free radical chain reaction.
7. Explain Diels-Alder reaction.
8. What is Aldol condensation? Discuss its mechanism with suitable examples.
9. Discuss ionic and covalent bonds and their importance in organic chemistry.
10. Write notes on resonance.
11. Give the synthesis and assay of ichthammol.
12. Give IUPAC names of
- (a) $\text{CH}_3 \cdot \underset{\text{O}}{\underset{\parallel}{\text{C}}} \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \underset{\text{O}}{\underset{\parallel}{\text{C}}} \cdot \text{CH}_3$
- (b) $\text{CH}_3 \cdot \underset{\text{CHO}}{\underset{|}{\text{CH}}} \cdot \text{CH}_2 \cdot \text{CH}_3$

13. Give the structure of the following :
- (a) O-xylene
- (b) 2, 4-dihydroxypentanal
- (c) 2-propen-1-ol.
-

APRIL - 2000

[KB 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 Sec. A & Sec. B : 60 marks
for Sec. A & Sec. B. Section C : 30 marks

Answer Sections A & B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Outline three general methods for the preparation of carbonyl compounds. Explain how and why the reactivity of the carbonyl group differs in aldehydes and ketones. (6 + 3)

(b) Formulate the reactions of benzaldehyde with : (4 × 1½)

(i) Conc. Sodium hydroxide

(ii) Potassium cyanide

(iii) Phenyl hydrazine and

(iv) Lithium aluminium hydride.

2. (a) What are grignard reagents? Explain the procedure for the preparation of Methyl magnesium bromide and precautions to be observed. (6)

(b) Give a detailed account of the synthetic applications of grignard reagents. (3)

3. (a) Describe any four general methods for the preparation of alcohols. (8)

(b) How are alcohols classified and characterised? (4)

(c) Show how ethyl alcohol can be converted into

(a) ethylene

(b) Diethyl ether

(c) Ethyl hydrogen sulfate. (3)

4. Write notes on : (5 × 3)

(a) Friedel-Craft's alkylation

(b) Hell-Volhard-Zelinsky reaction

(c) Wurtz reaction

(d) E₂ eliminations

(e) Diel's-alder reaction.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Discuss the mechanism of halogenation of alkanes in the presence of sunlight.

6. Give two examples each for activating and deactivating groups. Explain how halogens affect the reactivity and orientation of benzene towards electrophilic substitution.

7. Describe any three synthetic applications of ethyl acetoacetate.

8. Describe the preparation and uses of aspirin and iodoform.

9. What is meant by delocalised chemical bonding? Explain giving examples its role in stabilising organic compounds.

10. Discuss giving reasons the comparative basicity of ammonia, aniline, N, N-dimethyl aniline and methyl amine.

11. Outline any two general methods for the preparation of phenols. Show how phenol can be converted into (a) Picric acid and (b) Salicylic acid.

12. Discuss the mechanism of hydrolysis of tert-butyl bromide with aqueous sodium hydroxide.

13. What is meant by hydrogen bonding? Explain giving examples how it affects the physical properties of organic compounds.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. (a) Explain the following terms with suitable examples :

- (i) Hybridisation
- (ii) Polar molecules. (3)

(b) Which of the following compounds are polar and which are non polar?

- (i) CO_2
- (ii) CH_3Cl
- (iii) CCl_4
- (iv) CH_3OH
- (v) CHCl_3
- (vi) CH_3OCH_3 . (2)

6. How does acetic acid react with the following compounds?

- (a) PCl_5
- (b) LiAlH_4
- (c) P_2O_5
- (d) $\text{C}_2\text{H}_5\text{OH}/\text{H}^+$ and
- (e) SOCl_2 .

7. Arrange the following compounds in order of the increasing acidity and explain your answer :

$\text{C}_6\text{H}_5\text{COOH}$, HCOOH , ClCH_2COOH , CH_3COOH and CH_3COOH .

8. Write the assay, tests of purity and medicinal uses of any one of the following compounds :

- (a) Chloral hydrate
- (b) Formaldehyde solution.

9. What happens when

(a) Formaldehyde is treated with concentrated NaOH solution.

(b) Acetone is treated with NH_2OH

(c) Acetaldehyde is treated with dil. NaOH solution

(d) Benzaldehyde is heated with Fehling's solution

(e) Benzaldehyde is warmed with aniline.

10. Why are phenols much more acidic than alcohols but less so than carboxylic acids? Comment on the effect of substituents on acidity of phenols.

11. Write the medicinal uses and tests of purity of (a) hexylresorcinol (b) cresol.

12. (a) Write four general methods of preparation of ethers. (3)

(b) Write the IUPAC names of the following compounds :

- (i) $\text{C}_2\text{H}_5\text{OCH}_3$
- (ii) $\text{C}_6\text{H}_5\text{OC}_2\text{H}_5$. (2)

3. How are the following conversions done?

- (a) Benzamide to aniline.
- (b) *p*-bromoaniline from aniline.