[KD 272] **APRIL 2001**

M.Pharmacy DEGREE EXAMINATION.

(New Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. Discuss SN1 and SN2 nucleophilic substitution mechanism of alkyl halides with special emphasis on stereochemistry of the two reactions and the factors (e.g. nature of alkyl group, nucleophile and choice of solvent) which favors each. (25)

2. (a) Critically discuss the stereochemistry of :

(i) Allenes.

(ii) Biphenyls.

Name a drug each that exhibits this phenomenon.

(b) Write a brief note on :

(i) Conformation of cyclohexane ring system.

(ii) Application of optical rotatory dispersion. (13 + 12)

3. Dwell briefly on the following reactions with relevant examples :

(a) Mannich reaction.

(b) Oppeneaur oxidation.

(c) Grignard reaction.

(d) Hoffmann rearrangement.

(e) Birch reduction. (5 × 5 = 25)

4. (a) Comment on the spectrum of actions of phenothiazines and analyse the correlation between structure and biological action. Suggest synthesis for important phenothiazine derivatives.

(b) Write a note on the chemistry of tetrazole derivatives. (15 + 10)

APRIL 2001

[KD 293]

M.Pharmacy DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer ALL the questions.

All questions carry equal marks.

1. (a) What is rearrangement reaction? Classify. Explain the steps involved in this type of reaction.

(b) Discuss in detail, taking suitable examples the important rearrangement reactions involving carbon–nitrogen migration. Also comment on the mechanism. (7 + 18 = 25)

2. (a) Discuss the chemistry of pyrimidines. Briefly discuss the important pyrimidine derivatives employed as therapeutic agents and give their synthesis.

(b) Write a note on the chemistry of acridine derivatives. (10 + 15 = 25)

3. Dwell briefly on the following reactions with relevant examples : (5 × 5 = 25)

(a) Mannich reaction

(b) Michael reaction

(c) Ozonolysis

(d) Diel's Ader reaction

(e) Meerwin Pondroff's reduction.

4. Write notes on : (6 + 6 + 6 + 7 = 25)

(a) Stereoregulated polymerization

(b) Aliphatic nucleophilic substitution

(c) Addition to carbon–carbon multiple bonds

(d) Generation, stability, structure and fate of carbonium ions.

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NOVEMBER 2001

[KE 272]

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. Explain the following :

(a) Dehydration of 2–Butanol gives predominantly 2–Butene.

(b) Reaction of thionyl chloride and other similar reagents with alcohols frequently results in substitution with predominant retention of configuration.

(c) 2, 4, 6–Tri nitro chloro benzene undergoes facile alkaline hydrolysis at room temperature while chloro benzene itself does not.

(d) Sulphonation of aniline with dilute sulphuric acid gives ortho and para products while that with concentrated sulphuric acid gives meta amino sulphonic acid.

(e) Chlorination of *n*–butane in the presence of light gives 72% 2–chloro butane and only 28% of 1–chloro butane. (5 × 5)

2. Give an account of the following : (8 + 8 + 9)

(a) Stereo chemistry of biphenyls

(b) Resolution of racemic modification

(c) Stereo chemistry of tri covalent carbon.

3. Outline the mechanism and discuss the synthetic importance of the following : (8 + 8 + 9)

(a) Birch reduction

(b) Meerwin–Pondroff reduction

(c) Catalytic hydrogenation.

4. Discuss the chemistry and medicinal importance of the following heterocycles :

(a) Purines

(b) Pheno thiazines. (13 + 12)

5. (a) Outline the mechanism of addition of hydrogen bromide to propene. Explain Peroxide effect.

(b) Summarise the distinguishing features of E1 and E2 elimination. (13 + 12)

6. Give an account of the following : (5 × 5)

(a) Michael reaction

(b) Order of stability of carbocations

(c) Chemistry and medicinal importance of acridines

(d) Beckmann rearrangement

(e) Diastereomers.

[KE 293] **NOVEMBER 2001**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. Discuss the following reactions with suitable examples and highlight their synthetic utility.

(a) Beckmann rearrangement

(b) Birch reduction

(c) Michael reaction

(d) Ozonolysis. ($6\frac{1}{4} \times 4 = 25$)

2. (a) Discuss the chemistry of different purine derivatives. Give the interrelationship of different purine derivatives.

(b) Give the synthesis of any one of them. (25)

3. Give a detailed account of the stereochemistry of 5 membered rings, 6 membered rings, fused rings and bridged rings. (25)

4. (a) Write in detail about the stereochemistry of allenes. ($12\frac{1}{2}$)

(b) Write a note on partial and absolute asymmetric synthesis. ($12\frac{1}{2}$)

[KH 272] **SEPTEMBER 2002**

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Outline the general mechanism of the addition to carbon–carbon multiple bonds. Comment on the addition of hydrogen bromide to an unsymmetrical alkene in the presence and absence of peroxides.

(b) State giving reasons which of the following pairs would be expected to undergo E_2 elimination more readily upon treatment with sodium ethoxide in ethanol. (13 + 12)

(i) $CH_3-(CH_2)_3-Cl$ or $(CH_3)_3-C-Cl$

(ii) $CH_3-(CH_2)_3-Cl$ or

$CH_2=CH-CH_2-CH_2-Cl$

2. (a) Discuss the mechanism, synthetic applications and limitations of Friedel–Crafts acylation.

(b) Outline the mechanism for the free radical halogenation of methane. Discuss the evidence in favour of such a mechanism. (13 + 12)

3. Discuss the mechanism and synthetic importance of the following :

(a) Birch reduction

(b) Beckmann rearrangement

(c) Reformatsky reaction. (9 + 9 + 7)

4. (a) Write the conformations for the following pairs of geometric isomers :

(i) trans and cis 1, 2–dimethyl cyclohexane

(ii) cis and trans 1, 3 – chloroethyl cyclopentane

(iii) cis and trans 2 – methyl – 1 – cyclohexanol.

(b) Why is a 1, 3–di substituted cyclohexane more stable than the corresponding trans structure?

(c) Write a note on stereoregulated polymerisation. (9 + 8 + 8)

5. Discuss the synthesis, chemistry and medicinal importance of the following :

(a) Phenothiazine

(b) Acridine. (13 + 12)

6. Give an account of the following : (9 + 8 + 8)

(a) Neighbouring group mechanism in nucleophilic displacement

(b) Benzilic acid rearrangement

(c) Hoffmann rearrangement.

[KH 293] **SEPTEMBER 2002**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks. (4 × 25)

1. (a) Explain the mechanisms of S^1_N and S^i_N type of displacements using suitable examples.

(b) What is meant by neighbouring group effect? Explain giving suitable examples.

(c) Explain why chlorobenzene and vinyl chloride are much less reactive towards nucleophilic substitution.

(d) Outline the mechanism for the acid catalysed dehydration of alcohols citing specific examples. (4 × 6¼)

2. Comment on the following :

(a) Halogens are deactivating and yet ortho, para directing.

(b) Addition of bromine at 80°C gives 80% of 1, 4 –addition product whereas the same addition at –80°C gives 80% of 1, 2–addition product.

(c) Dichloro carbene is involved in Reimer–Tiemann reaction.

(d) Benzamide is converted into aniline upon treatment with hypohalite. (4 × 6¼)

3. Discuss the mechanistic aspects, synthetic applications and limitations of Grignard reactions citing suitable examples. (25)

4. Write the names and structures of all the five and six membered heterocyclic systems containing two nitrogen atoms and discuss the chemistry and medicinal importance of any two of them. (5 + 10 + 10)

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APRIL 2003

[KI 293] Sub. Code : 1005

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

1. Explain with examples the chemistry/reasons for the following :

(a) $\alpha-\beta-$ unsaturated carbonyl compounds give only 1 : 2 addition.

(b) Allylic carbons undergo nucleophilic substitution reactions giving a normal and another rearranged product.

(c) Cyclic peroxides can be synthesised by photo oxidation of aromatic conjugated dienes reacting with oxygen.

(d) Peroxy acids give epoxides from olefins that can be converted to hydroxy derivatives by hydrolysis.

(e) Olefins can be converted to glycols by syn. addition, using OsO_4 or alkaline $KMnO_4$ while m. chloroperoxy benzoic acid and H_2O_2 give anti hydroxylation products. (5 × 5)

2. Explain the reaction mechanisms and their importances in synthetic organic chemistry with relevant examples :

(a) Meerwin–Pondroff reaction

(b) Reformatsky reaction

(c) Clemmensons reaction. (9 + 8 + 8)

3. Discuss the chemistry and synthesis of medicinally active compounds of

(a) Phenothiazines and

(b) Purines.

List various compounds in each group.(13 + 12)

4. Write an account on the following and their importance : (5 × 5)

(a) Tricovalent carbons and stereochemistry

(b) Stereospecificity in biphenyls

(c) Resolution techniques for racemic mixtures

(d) Chiral centres and diastereoisomers

(e) Active methylene groups.

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OCTOBER 2003

[KJ 293] **Sub. Code : 1005**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

All questions carry equal marks.

(4 × 25 = 100)

1. (a) Account for the fact that sulphonation of aniline with dilute sulphuric acid gives ortho and para amino benzene sulphonic acids while that with concentrated sulphuric acid yields meta amino benzene sulphonic acid. (9)

(b) Explain why the reaction of thionyl chloride and similar reagents with alcohols frequently results in substitution with predominant retention of configuration. (8)

(c) Formulate the reaction of hydrogen bromide with propene both in the absence and in the presence of peroxides. Justify the formation of the products in each case. (8)

2. Give an account of the mechanism and synthetic importance of the following reactions giving examples.

(a) Beckmann rearrangement. (9)

(b) Oppenauer oxidation. (8)

(c) Reformatsky reaction. (8)

3. (a) What are allenes? Explain their stereochemistry giving examples. (9)

(b) Discuss the phenomenon and applications of optical rotatory dispersion. (8)

(c) Explain why a cis 1,3–disubstituted cyclohexane is more stable than the trans structure on the basis of conformational considerations. (8)

4. Discuss the chemistry, synthesis and medicinal importance of

(a) Phenothiazine. (9)

(b) Pyrazine. (8)

(c) Purine. (8)

APRIL 2004

[KK 293] Sub. Code : 1005

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Sec. A & B : Two hours and forty minutes Sec. A & B : 80 marks

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

Answer ALL questions.

SECTION A

Long Essay. (2 × 15 = 30)

1. Discuss Nucleophillic substitution for aromatic compounds in detail. Briefly explain Chichibabin reaction. (12 + 3)

2. Classify Rearrangement reactions. Explain the reaction mechanism of any 3 rearrangement reactions. (6 + 3 + 3 + 3)

SECTION B

Short notes. (10 × 5 = 50)

3. List out the important reduction reactions in organic synthesis and explain any one Name reaction.

4. Explain Beckmnn rearrangement reaction with its reaction mechanism and applications.

5. How is Grignard reagent prepared, mention its application in organic synthesis?

6. Briefly Highlight the stereochemical evidence for SN_1 and SN_2 reactions.

7. How is oppeneaur oxidation different from ozonalysis. Explain with suitable examples.

8. Mention the importance of Reformatsky reaction in organic synthesis.

9. How do you determine the configuration of Cis/Trans Isomers.

10. What do you mean by Stereo selective synthesis? Explain with suitable examples.

11. How is Triazole prepared in the laboratory, Name two drugs possessing triazole ring.

12. Briefly explain Stereo regulated polymerization.

[KL 293] AUGUST 2004 Sub. Code : 1005

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Sec. A & B : Two hours and forty minutes Sec. A & B : 80 marks

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

Answer ALL questions.

SECTION A — (2 ×15 = 30 marks)

Long Essay :

1. Discuss the orientation and reactivity of Aromatic electrophillic substitution in mono and disubstituted benzene.

2. Explain the mechanism of E_1 and E_2 reactions. Give their stereo chemical evidences.

SECTION B — (10 × 5 = 50 marks)

Short notes :

3. How do you distinguish Clemmensens from heolff Kischners reduction.

4. Give the reaction mechanism of Free-radical substitution.

5. Explain Fries rearrangement and give its application in organic synthesis.

6. How is Meerwein Ponndorff reaction different from Oppeneaurs oxidation. Bring out their differences?

7. What are conformational isomers? How are they different from configurational isomers? Explain.

8. Explain the phenomenon of optical rotatory dispersion and mention their applications.

9. Write on stereochemistry of five membered rings.

10. Write the reaction mechanism of Hoffmann rearrangement.

11. Classify rearrangement reactions.

12. Outline the method for the synthesis of any two heterocyclic ring system.

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FEBRUARY 2005

[KM 293] **Sub. Code : 1005**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Sec. A & B : Two hours and forty minutes Sec. A & B : 80 marks

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

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

Long Essay :

1. (a) What are free radicals? Give the characteristic features of their reactions and show how these have helped in the study of organic reactions.

(b) Give the nature and mechanism of oxidative phenol coupling and mention its importance.

(10 + 5 = 15)

2. (a) Give an account of nucleophilic and electrophilic substitutions in Aromatic system.

(b) Mechanism of electrophilic addition of Br_2 to an olefinic double bond with special reference to the stereochemical aspects of addition.

(10 + 5 = 15)

SECTION B — (10 × 5 = 50 marks)

3. Explain the important reactions that are characteristic of carbon-carbon double bond.

4. Discuss the factors that influence the mechanism of bimolecular substitution.

5. Explain the mechanism of Beckmann rearrangement.

6. Discuss the mechanism of Diels' alder reaction and explain its significance in Pharmaceutical chemistry.

7. Discuss the significance of Hoffmann rearrangement with suitable example.

8. Explain the different methods by which the benzoquinolines can be prepared.

9. What are phenothiazines? How they are prepared? Explain the relevance of phenothiazines in Medicinal chemistry?

10. Explain the stereochemistry of Allenes.

11. What is optical rotatory dispersion? How it is measured? Give its significance in determining the biological activity of the compounds.

12. Write a note on stereo selective polymerisation.

[KO 293] MARCH 2006 Sub. Code : 1005

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

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

Answer ALL questions.

I. Long Essay : (2 × 15 = 30)

1. Explain the following reaction mechanisms with emphasis on their role in synthesis.

(a) Oppeneaur oxidation

(b) Grignard reaction. (8 + 7)

2. Explain in detail the reaction mechanism and reactivity of aromatic nucleophilic substitution with examples. (8 + 7)

II. Short notes : (10 × 5 = 50)

1. Explain the major differences between electrophilic substitution and rearrangement reactions.

2. Explain the reaction mechanism of Reformatsky reaction.

3. Explain briefly the stereo chemistry of tricovalent carbon.

4. Explain the synthesis of two important drugs belonging to phenothiazines.

5. Explain the phenomena optical dispersion and optical rotation with examples.

6. Birch reduction reaction.

7. Explain Aliphatic nucleophilic substitution.

8. Explain chemistry of purines.

9. Explain the synthesis of two heterocyclic ring systems.

10. Explain ozonolysis with suitable examples.

SEPTEMBER 2006

[KP 293] Sub. Code : 2811

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

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

Answer ALL questions.

I. Long Essay :

1. (a) Briefly discuss the geometrical isomerism of fused-ring systems.

(b) Give the mechanism of the Beckmann rearrangement. What is its significance in drug synthesis? (10 + 10 = 20)

2. Discuss in detail the orientation and reactivity in SN1 and SN2 reactions. (15)

3. Explain the mechanism of free radical substitutions in various substrates and discuss the reactivity. (15)

II. Short notes : (6 × 5 = 30)

1. State the octant rule. With the help of a suitable example show how cotton effect curves are useful in structure elucidation.

2. Give the mechanism of the Mannich reaction and explain how it is useful in drug synthesis.

3. Discuss the chemistry of the phenothiazine ring system including synthesis. Mention its importance in pharmaceutical chemistry.

4. Briefly describe the neighboring-group mechanism of aliphatic nucleophilic substitution.

5. Give the reaction mechanism of Free radical substitution.

6. Explain the cause of optical activity in chiral molecules.

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[KQ 293] MARCH 2007 **Sub. Code : 2811**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

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

Answer ALL questions.

I. Long Essay :

1. Explain the following reaction mechanisms with emphasis on their role in synthesis

(a) Open ring oxidation

(b) Grignard reaction. (20)

2. Discuss the dromatic electrophyllic substitution reaction in detail with special reference to mono substituted Benzenes. (15)

3. Explain the mechanism of SN_1 and SN_2 reactions and give their stereochemical aspects. (15)

II. Short notes : (6 × 5 = 30)

1. Explain Birch reduction with mechanism and its applications.

2. Classify rearrangement reactions and give the synthetic applications of Beckmann rearrangement.

3. Explain clemmenson reduction and give tis application in organic synthesis.

4. Briefly explain the stereochemical evidence for E_1 and E_2 reactions.

5. Explain any two methods used for the determination of configuration of geometrical cromers.

6. What is stereoselective synthesis? Explain with examples?

MARCH 2007

[KQ 319] **Sub. Code : 2855**

M.Pharm. DEGREE EXAMINATION.

(Regulation 2006)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours | Maximum : 100 marks

Theory : Two hours and forty minutes | Theory : 80 marks

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

I. Long Essay :

Answer ALL questions.

1. (a) Discuss the stereochemistry involved in S_N1 and S_N2 reactions.

(b) Discuss the electrophilic aromatic substitution reactions. (10 + 10 = 20)

2. Discuss briefly the different synthetic methodologies for obtaining drugs. (15)

3. Discuss the synthetic approaches for obtaining heterocyclic ring systems in drug molecules. (15)

II. Short notes : (6 × 5 = 30)

1. Discuss protection and deprotection of different groups.

2. Discuss Birch reduction.

3. State orbital symmetry rules and their application.

4. Write the mechanism of Hoffman rearrangement and write about its importance.

5. Write about the hydrolysis of esters and the role played by the catalyst.

6. Write about carbanions.

SEPTEMBER 2007

[KR 293] **Sub. Code : 2811**

M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours — Maximum : 100 marks

Theory : Two hours and forty minutes — Theory : 80 marks

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

Answer ALL questions.

I. Long Essay :

1. (a) What are the structural features of long lived free radicals?

(b) Free radical reactions are described as chain reactions. Give mechanisms. Discuss methods to initiate free radical reactions.

(c) Discuss the neighbouring group assistance in free radical reactions. (20)

2. Discuss in detail the E_1 and E_2 reaction with suitable examples. What are the experimental conditions that favour elimination reactions over substitution reactions? (15)

3. Define Catalysis. Explain the importance of homogenous catalysis in the manufacture of drugs. Write the phase transfer catalysis in epoxide formation from aldehyde. (15)

II. Short notes : (6 × 5 = 30)

1. Give the mechanism of Meerwein Ponndroff Varky reduction and explain how is useful in drug synthesis.

2. Discuss the chemistry of the Phenothiazine ring system, including synthesis. Mention its importance in pharmaceutical chemistry.

3. Write the basic theory of photochemical reactions and mention their applications.

4. Write the mechanism of Beckmann rearrangement and mention its application in manufacture of different drug molecule in synthetic chemistry.

5. Discuss in brief in combinatorial chemistry with special emphasis on parallel organic synthesis technology.

6. Write the mechanism of reaction involving Grignard reagent and its synthetic applications.

SEPTEMBER 2007

[KR 319] **Sub. Code : 2855**

M.Pharm. DEGREE EXAMINATION.

(Regulation 2006)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

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

Answer ALL questions.

I. Long Essay :

1. (a) Discuss the nucleophilic aromatic substitution reactions.

(b) Discuss about the elimination and addition reactions by giving suitable examples. (10 + 10 = 20)

2. Discuss various types of per cyclic reactions giving Emphasis on sigmatrophic rearrangements. (15)

3. Define Symphoria and discuss about the various techniques for preparing Chiral drugs. (15)

II. Short notes : (6 × 5 = 30)

1. Write about the mechanism involved in Beckmann rearrangement.

2. Define oxidation and reduction. Write about various oxidising and reducing agents used in oxidation and reduction reactions.

3. Define anchimeric assistance by giving two examples.

4. Write about the phase transfer catalysis in anhydrides.

5. Discuss in brief for attaching six membered heterocyclic ring systems to drugs.

6. Write about the mechanism involved in oppeneaur oxidation. Write about its significance.

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September 2008

[KT 319] **Sub. Code : 2855**

M.Pharm. DEGREE EXAMINATION.

(Regulation 2006)

First Year

Branch II — Pharmaceutical Chemistry

Paper II — ADVANCED ORGANIC CHEMISTRY

Q.P. Code : 262855

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (3 × 20 = 60)

1. (a) Discuss the formation, structure, stability and reactions involving the carbocation.

(b) Discuss pinacol – pinacolone rearrangement reaction with example. (10 + 10 = 20)

2. (a) Give an account of combinatorial chemistry with special reference to its application in drug discovery.

(b) Give an account of phase transfer catalysis and its applications. (12 + 8 = 20)

3. (a) Explain the different mechanisms involved in aromatic nucleophilic reactions.

(b) What are pericyclic reactions? Explain the mechanism involved in Diel's - Alder reaction. (10 + 10 = 20)

II. Short notes : (8 × 5 = 40)

1. Discuss the structure, stability and stereochemistry of free radicals.

2. Write a note on Retro — Synthetic analysis.

3. Write the Mechanism involved in (a) Oppenear oxidation (b) Michael reaction.

4. Give a detailed account of macro beads in new solid phase synthesis.

5. (a) Give examples of neighbouring group participation in a SN_2 reactions.

(b) Give the mechanism of Hoffmann rearrangement.

6. Give an account of addition to Carbon — Carbon multiple bonds.

7. Give the definition and mechanism of Reformatsky reaction and its importance.

8. Outline the synthetic approach for purine nucleus and phenothiazine.

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March 2009

[KU 319] **Sub. Code: 2855**

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch II – PHARMACEUTICAL CHEMISTRY

Paper II – ADVANCED ORGANIC CHEMISTRY

Q.P. Code : 262855

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(3 x 20 = 60)**

1. a) Explain the mechanism and reactivity of addition reaction to carbon –hetero multiple bonds.
   b) Write a note on delocallized chemical bonding.
   c) Draw the Tablonski diagram and discuss the energy transition.

2. a) Discuss the mechanism and reactivity of aliphatic nucleophilic substitution reaction with example.
   b) Give the application of Mannich reaction with suitable example.
   c) Give the stability and structure of carbon ions.

3. a) What are the various types of pericyclic reactions, Discuss their mechanisms.
   b) Explain the asymmetric synthesis for preparing chiral drugs with an example.
   c) Discuss the synthones approach for carbon-carbon bond formation.

II. Write Short Notes : **(8 x 5 = 40)**

1. Discuss the Resonance and field effects of structure on reactivity.
2. Give the application of combinatorial chemistry.
3. Comment on the various reagents used for oxidation- reduction reactions.
4. Discuss the Michael reaction with an example.
5. Outline the synthesis of pyrrole and furan.
6. Discuss the synthetic utility of Grignard reaction.
7. Explain the phase transfer catalysis in anhydride..
8. What are the various approaches for deprotection of groups.

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September 2009

[KV 319] **Sub. Code: 2855**

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch II – PHARMACEUTICAL CHEMISTRY

Paper II – ADVANCED ORGANIC CHEMISTRY

Q.P. Code : 262855

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(3 x 20 = 60)**

1. a) Define heterocyclic compound. Classify them with examples. Explain the preparation, properties and uses of any six membered heterocycle compounds.
   b) Explain the importance of combinational chemistry in drug discovery.

2. a) Explain different techniques for preparing chiral drugs.
   b) Explain how stereo chemistry effects the biological action of a drug.

3. a) Explain in detail about retrosynthetic analysis.
   b) Briefly give a detailed explanation about phase transfer catalysis.

II. Write Short Notes : **(8 x 5 = 40)**

1. Discuss about stability of carbocations.
2. Explain the importance of Mannich bases.
3. Explain why pyridine is less basic than aliphatic amines.
4. Explain with examples various pericylic reactions.
5. Explain the synthesis and uses of grignard reagents.
6. Write the mechanism involved in:
   a) Micheal reaction **b)** Hoffman rearrangement.
7. Compare and explain the reactivity of furan and pyrrole.
8. Explain the addition to carbon-carbon multiple bonds.

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March 2010

[KW 319] **Sub. Code: 2855**

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch II – PHARMACEUTICAL CHEMISTRY

Paper II – ADVANCED ORGANIC CHEMISTRY

Q.P. Code : 262855

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(3 x 20 = 60)**

1. a) Define free radical. Explain in detail the formation of free radial. Explain any reaction involving free radical.
   b) Explain in detail the effect of structure on reactivity.

2. a) Explain with examples how chirality influences the biological activity of a drug .
   b) Explain the techniques used to prepare chiral drugs.

3. a) Explain in detail with mechanism about Beckman rearrangement.
   b) Discuss about aromatic electrophilic substitution.

II. Write Short Notes : **(8 x 5 = 40)**

1. Give an account of macro beads in new solid phase synthesis.
2. Write the mechanism involved in wolf – kishner reduction.
3. Explain hyperconjugation.
4. Explain the importance of N-Bromosuccinamide in organic synthesis.
5. Distinguish between SN1 and SN_2 reaction.
6. Pinacole – pinacolone rearrangement.
7. Define hemolytic and heterolytic bond fission.
8. Explain about fries rearrangement.

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September 2010

[KX 319] **Sub. Code: 2855**

M.PHARM. DEGREE EXAMINATION

(Regulations 2006)

Candidates admitted from 2006-2007 onwards

FIRST YEAR

Branch II – PHARMACEUTICAL CHEMISTRY

Paper II – ADVANCED ORGANIC CHEMISTRY

Q.P. Code : 262855

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(3 x 20 = 60)**

1. a) Give a detailed account on structure formation stability and reactions involving the carbenes and nitrenes.

   b) Explain Chirolity. Discuss the techniques for preparing chirol drugs.

2. Explain the following reaction mechanisms and its applications in drug synthesis.

   a) Hoffmann rearrangement.

   b) Birch reduction.

3. a) Explain in the different synthetic methodologies for obtaining drugs.

   b) Give a detailed account on protection and deprotection of various groups.

II. Write Short Notes : **(8 x 5 = 40)**

1. Explain the mechanism and application of Mannich reaction.
2. Discuss the importance of combinatorial chemistry in drug design.
3. Explain Fries rearrangement and its applications in organic synthesis.
4. Discuss about the basic theory and applications of phytochemical reactions.
5. Explain in detail about retrosynthetic analysis.
6. Discuss the synthetic approaches for attaching hetero cyclic ling system in drug molecules having six membered ring.
7. Expalin in brief about cyclo addition reactions.
8. Discuss the phase transfer catalysis and its applications in reduction reaction.

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MAY 2011

[KY 319] **Sub. Code: 2855**

M.PHARM. DEGREE EXAMINATION

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BRANCH II – PHARMACEUTICAL CHEMISTRY

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Q.P. Code : 262855

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(3 x 20 = 60)**

1. Explain SN_1 and SN_2 nucleophilic substitution mechanism of alkyl halides with suitable example.
2. Discuss the following reactions with suitable examples and highlight their synthetic utility.

   a) Michael reaction. b) Meerwin Ponndorff reaction.
3. Discuss the chemistry of different purine derivatives. Give the interrelationship of different purine derivatives.

II. Write Short Notes: **(8 x 5 = 40)**

1. Classify rearrangement reactions.
2. Write a note on pericyclic reactions in cycloaddition reaction.
3. Briefly explain the synthone approach for carbon – carbon bond formation.
4. Write a note on asymmetric synthesis.
5. Give a brief note on phase transfer catalysis in ester hydrolysis.
6. Write a note on carbenes and nitrenes.
7. List out the important reduction reactions in organic synthesis and explain any one naming reaction.
8. Write a note on protection and deprotection of various groups.

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