

**Adikavi Nannaya University**

III Semester Model Question paper

**PAPER-I: ORGAIC REACTION MECHANISMS-I and PERICYCLIC REACTIONS**

(With effect from 2016-2017 admitted Batch)

Time 3 hours

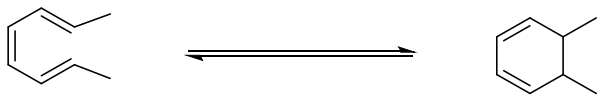
Answer **ALL** Questions

Max Marks: 75

**PART-A**

All questions carry equal marks

(4x15=60 Marks)

1. a) Write a short note on the following.
- i) Neighbouring group participation (NGP) by bromine and phenyl groups. (10 M)
  - ii) Mitsunobu reaction. (5 M)
- Or
- b) Write a short note on the following.
- i) HVZ reaction (8 M)
  - ii) Dakin- west reaction (7 M)
2. a) write a short note about the following
- i) Homotopic and Heterotopic groups and faces. (10 M)
  - ii) Pro-R and pro-S, Re and Si (5 M)
- Or
- b) Write a short note about the following
- i) Substrate stereo selectivity and product stereo selectivity.
  - ii) Chiral shift reagents and chiral HPLC
3. a) Discuss the 1,3,5-hexatriene system by using wood ward Hoffmann correlation method (10 M)
- b) Explain the terms DIS rotation and CON rotation with reference to electro cyclic reactions (5 M)
- Or
- c) Discuss 1,3 butadiene and 1,3,5hexatriene systems by using Wood word Hoffman and correlation method. (15 M)
4. a) Construct a correlation diagram for the conversion of
- 
- (5 M)
- b) What is cope rearrangement? Explain its mechanism. How is Claisen rearrangement related to Cope rearrangement? (10 M)

Or

- c) Write briefly about (3, 3) and (5, 5) sigma tropic rearrangements  
d) Write a short note on Barton reaction

SECTION-B

(5 x 3 = 15 M)

ANSWER ANY FIVE QUESTIONS

5. i) Write about hydrolysis of esters  
(ii) Write about aliphatic diazo coupling.  
iii) Write about chiral NMR  
iv) Write about enantiomeric excess and specific rotation.  
v) Write about the classification of pericyclic reactions with suitable examples.  
vi) Write about chelotropic reactions.  
vii) What is Aza Cope rearrangement  
viii) Write about Fluxional tautomerism

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III Semester Model Question paper

**PAPER-II: ORGANIC SPECTROSCOPY-I**

(With effect from 2016-2017 admitted Batch)

Time 3 hours

Answer **ALL** Questions

Max Marks: 75

**PART-A**

All questions carry equal marks

(4x15=60 Marks)

6. a) Write about the following
- Bathochromic shift
  - Beer-lamberts law
  - Auxochrome
- Or
- b) Write about the Woodward-Fieser rules and apply it for the calculation of  $\lambda_{\max}$  of  $\alpha, \beta$ -unsaturated carbonyl compounds?
7. a) Write a short note about the following
- Factors effecting vibrational frequency
  - Stretching and bending vibrations.
- Or
- b) Write a short note about the following
- Finger print region and its importance.
  - Write typical group frequencies for CH, OH, NH, CO and aromatic systems.
8. a) Write the basic principle of NMR spectroscopy and explain about nuclear spin and nuclear resonance
- Or
- b) Write about the following
- Factors influencing chemical shift .
  - Coupling constant J and factors effecting J value.
9. a) Write a short note on the following
- MALDI and FAB
  - Factors effecting fragmentation
- Or
- b) Write a short note on the following
- MCLAFFERTY rearrangement
  - Nitrogen rule

SECTION-B

(5 x 3 = 15 M)

ANSWER ANY FIVE QUESTIONS

- 5 ) i) What is Hypochromic shift?
- (ii) Write the UV absorption values of carbonyl compounds.
- (iii) Write about bending vibrations
- (iv) Write the IR values of acetophenone, 2-Propanol and o-cresol
- (v) What is shielding and deshielding.
- (vi) Write the C13 chemical shift values of aliphatic, olefinic, alkene, aromatic and hetero aromatic, carbonyl compounds.
- (vii) What is the difference between molecular ion peak and metastable peak?
- (viii) Differentiate ion analysis and ion abundance

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**PAPER-III: MODERN ORGANIC SYNTHESIS-I**

(With effect from 2016-2017 admitted Batch)

Time 3 hours

Max Marks: 75

**PART-A**

All questions carry equal marks

(4x15=60 Marks)

10. a) Discuss the synthetic applications of

- ix) Gilmanns Reagent (8 M)
- x) Umpolung. (7 M)

Or

b) Write a short note on the following.

- i) Baylis Hilmann reaction (7 M)
- ii) Stille coupling and Suzuki coupling (8 M)

11. a) write a short note on the following

- i) Bredt's rule
- ii) Wittig reaction and Wittig-Horner reaction

Or

b) Write a short note about the following

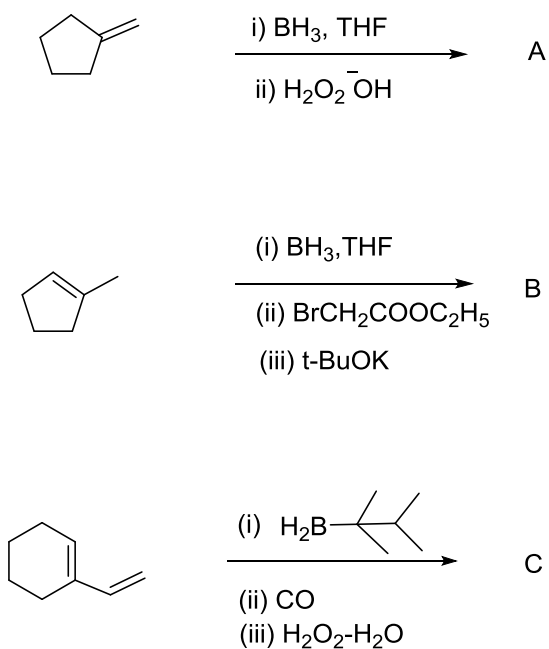
- i) Mc Murray coupling (7 M)
- ii) Olefin cross coupling metathesis and ring opening metathesis (8 M)

12. a) Write a short note on the following

- i) HLF reaction
- ii) BARTON reaction

Or

b) Predict the products and explain the mechanism for the following reactions



13. a) What is PTC? Write the types of Phase Transfer Catalyst, mechanism and advantages of PTC method. Or (15M)

b) Write the protection and deprotection of the following (15 M)

i) Alcohols

ii) Amines

iii) Carbonyl compounds

#### SECTION-B

(5 x 3 = 15 M)

#### ANSWER ANY FIVE QUESTIONS

14. i) Write about Negishi coupling.  
 (ii) Write the formation of enolates and enamines .  
 xi) What is Hoffmann rule.  
 xii) Write about the Olefination by Nysted reagent .  
 xiii) Write about the stereochemistry of the hydroboration.  
 xiv) Write about the protonoyis of organoboranes.  
 xv) What is Fries rearrangement.  
 xvi) Write about Click chemistry.

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III Semester Model Question paper

**PAPER-IV: NATURAL PRODUCTS**

(With effect from 2016-2017 admitted Batch)

Time 3 hours

Answer **ALL** Questions

Max Marks: 75

**PART-A**

All questions carry equal marks

(4x15=60 Marks)

15. a) Write the structural elucidation of Strychnine?  
Or  
b) Write the synthesis of Morphine?
16. a) Write the structural elucidation of Taxol?  
Or  
b) Write the synthesis of  $\beta$ -Amyrine?
17. a) Write the structural elucidation of Progesterone?  
Or  
b) Write the synthesis of the Cholesterol?
18. a) Write the structural elucidation of Quercitin?  
Or  
b) Write about the following  
i) Write the bio synthesis of flavonoids and isoflavonoids?  
ii) Write about acetate pathway and shikimic pathway?

**SECTION-B**

ANSWER ANY FIVE QUESTIONS

19. i) Write the physiological action of Camptothecin?  
ii) Write about the isolation of alkaloids?  
iii) Write the occurrence of terpenoids?  
iv) Write the stereochemistry of Azadirachtin?  
v) Write about basic skeleton of hydrocarbons?  
vi) Write about the biosynthesis of steroids?  
vii) Write about the isolation of flavonoids and isoflavonoids?  
viii) Write about the stereochemistry of Cyanidine and Genistein