Total No. of Questions : 6]

SEAT No. :

P1250

[Total No. of Pages : 4

[5432]-3001

M.Sc.

DRUG CHEMISTRY

CHD - 361 : Chemistry of Heterocycles and Drug Synthesis

(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicates full marks.***
3) ***Answers to the two sections should be written in separate answer books.***

SECTION - I

Q1) Explain any four of the following : **[8]**

a) 4-Chloropyridine easily undergoes hydrolysis in warm water.

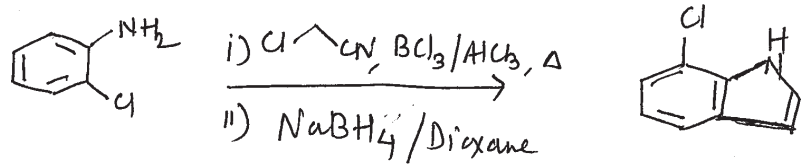
b) Explain the synthesis of furan from pentose.

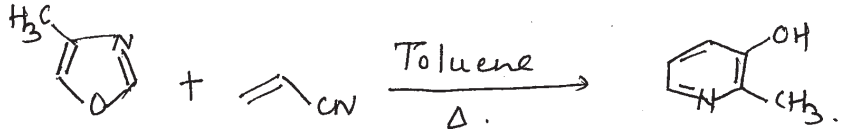
c) Pyrazole has higher boiling point than iso-oxazole.

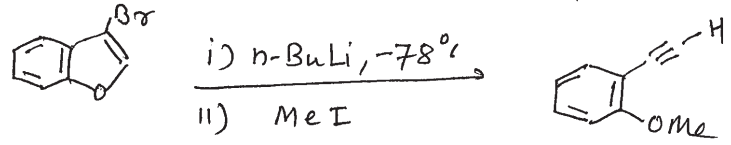
d) Coumarin undergo cycloaddition reaction.

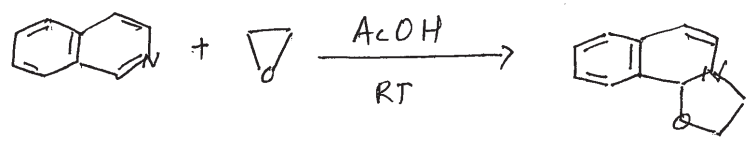
e) 2-Aminoquinoline on diazotization give 2-quinolone.

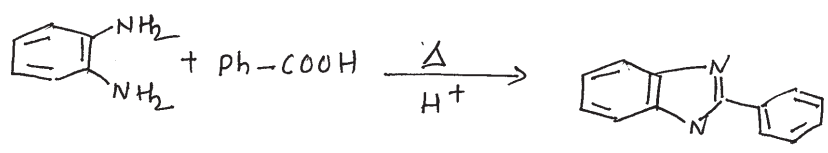
Q2) Suggest the suitable mechanism for any four of the following : **[8]**

a) 

b) 

c) 

d) 

e) 

P.T.O.

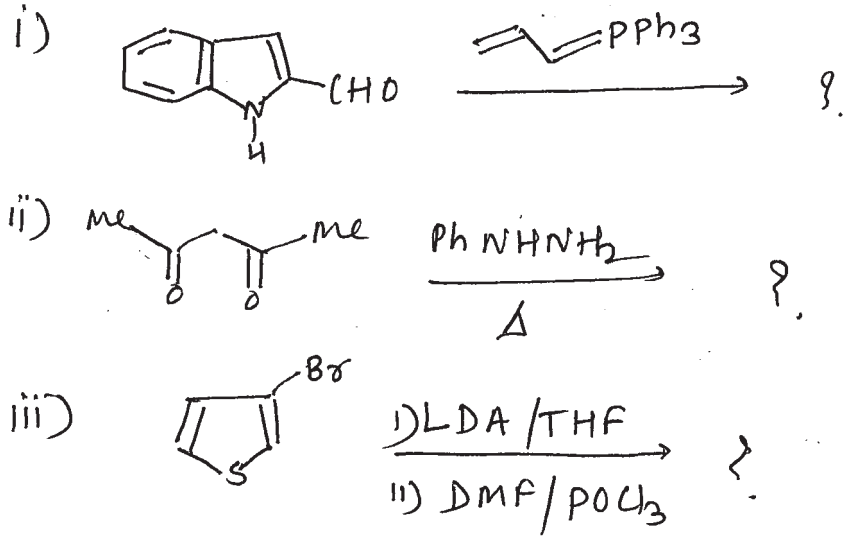
Q3) a) Write short notes on any two of the following : **[4]**

i) Tschitschibabin Reaction.

ii) Medlung Indole Synthesis.

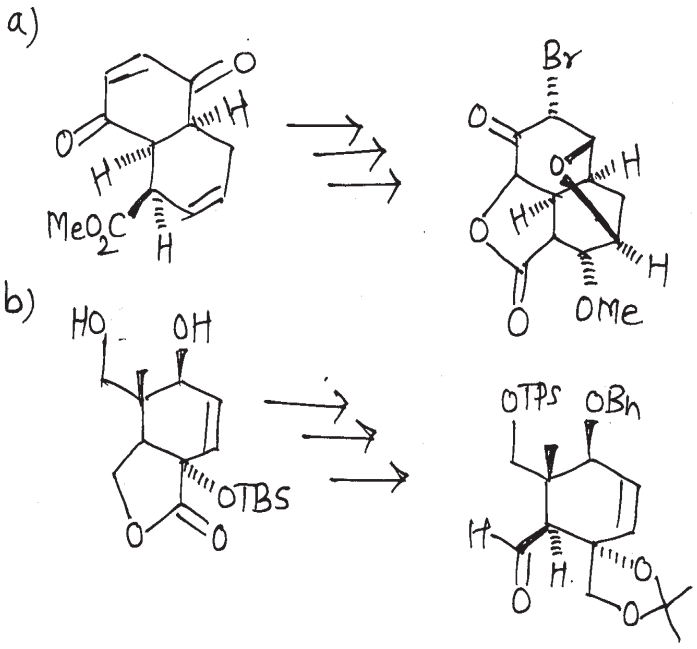
iii) Paal-Knorr synthesis of Pyrrole.

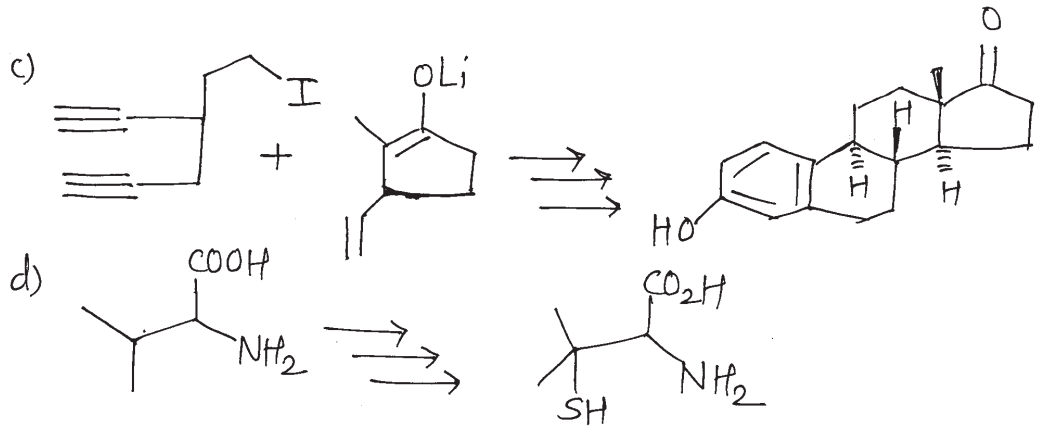
b) Predict the products for any two of the following : **[5]**



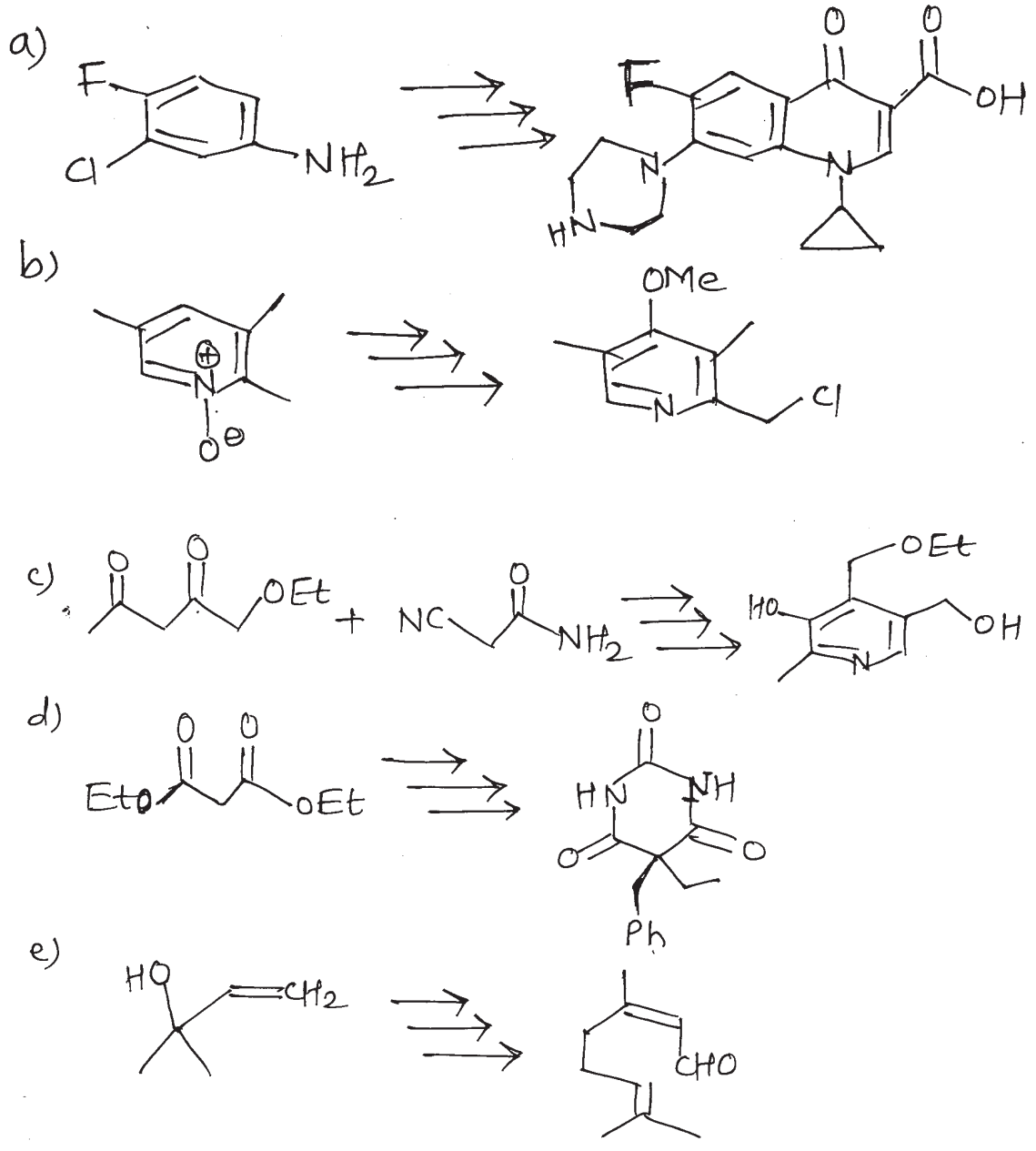
SECTION - II

Q4) Discuss the steps involved in the synthesis of following molecules. Explain the stereochemistry and mechanism involved (any three) **[9]**



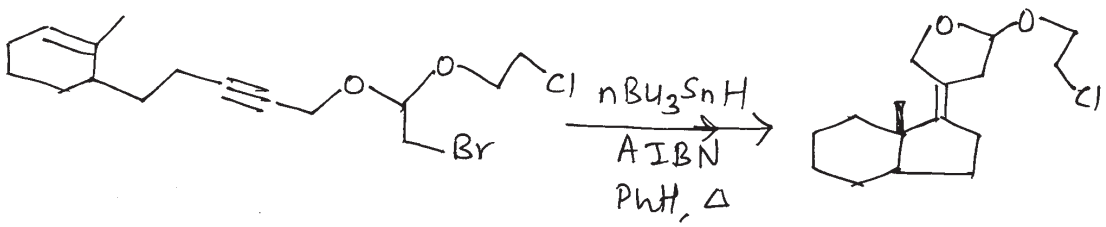


Q5) Discuss the steps involved in the synthesis of following drug molecules from the precursor shown (any four) : **[10]**

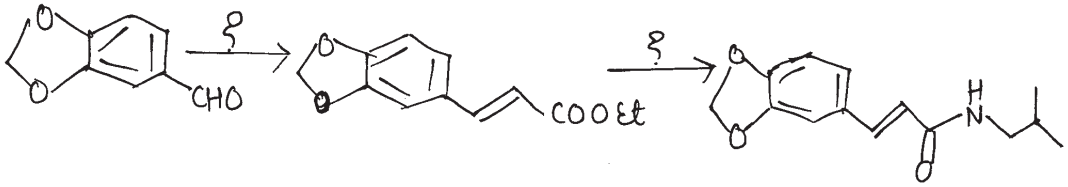


Q6) Answer any two of the following : **[6]**

a) Explain the mechanism in a given transformation.



b) Insert the missing reagents in the given sequence of reaction. Explain the steps with mechanism.



c) Explain any one of the following :

i) Shapiro reaction.

ii) Gabriel synthesis.

Total No. of Questions :6]

SEAT No. :

P1251

[Total No. of Pages : 7

[5432]-3002
M.Sc.
DRUG CHEMISTRY
CHD-362: Advanced Analytical Methods
(2013 Pattern) (Semester-III)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All question are compulsory.***
2) ***Answers to the two sections should be written in separate answer book.***
3) ***Figures to the right indicate full marks.***

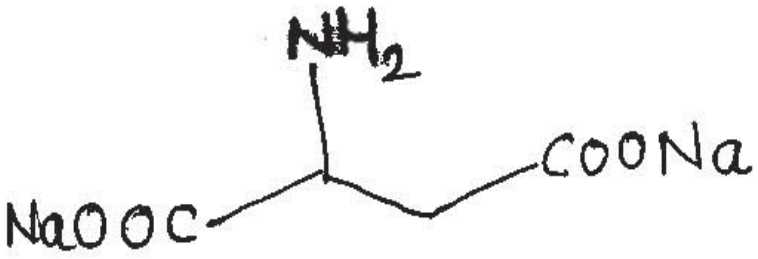
SECTION-I

Q1) a) Answer the following. (any three) **[6]**

i) Explain the splitting pattern and intensity of signals in 1, 4 - dioxane-d_8 in 13_C NMR.

ii) O-Dichlorobenzene shows peaks at 96, 98 and 100 in the ratio 9:6:1 in its MS. Explain.

iii) Sodium Asparate in D_2O show signals in ^1H NMR at 3.5 (dd, J=10 & 4 Hz), 2.4 (dd, J=15 & 4Hz), 2.2 (dd, J=15 & 10 Hz). Explain.

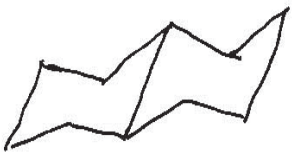


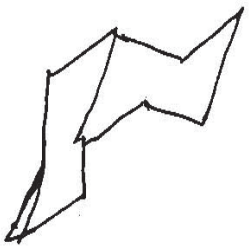
iv) DEPT is more helpful than APT in CMR. Explain.

b) Distinguish between the following pairs using the indicated spectral methods. (any two) **[3]**

P.T.O.

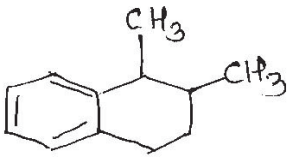
i)

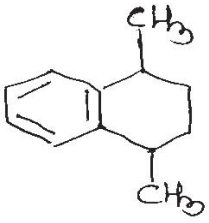




PMR

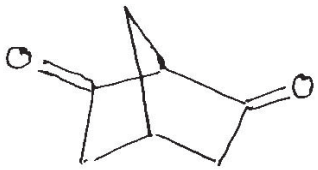
ii)

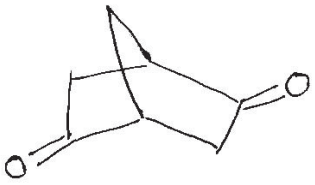




Mass

iii)





CMR

Q2) Using the given spectral information, deduce the structure of the following. (any four). **[10]**

a) MF: $C_9H_{12}O_3S$

PMR: 1.3 (t, J=6Hz, 3H), 2.45 (5, 3H),
4.1(9, J=6Hz, 2H), 7.45 (d, J=8Hz, 2H)
8.8 (dd, J=8Hz, 2H).

b) M.F: $C_{10}H_{10}O_3$

IR : 1680, 1602 Cm^{-1}

PMR: 3.1(t, J=6Hz, 2H), 3.9 (S, 3H),
4.5 (t, J=6Hz, 2H), 6.7 (d, J=2Hz, 1H)
6.9 (dd, J=8 & 2 Hz, 1H), 8.05 (d, J=8 Hz, 1H)

c) M.F: $C_8 H_9 NO$

CMR: 161 (d), 142 (s), 129 (d, str.)
125 (d, str.), 121 (d), 31 (q)

d) M.F: $C_5 H_{10}O_3$

IR: 1728 Cm^{-1}

PMR: 2.1 (s, 3H), 3.35 (S, 6H), 4.6 (S, 1H)

CMR: 25, 55, 104, 204

DEPT90: 25, 55, 104, no peak , 104 up

DEPT135:204 no peak, 25, 55, 104 up.

e) IR: 1715 cm^{-1}

Mass: 128 (M^+ ,3%), 85 (10%), 72 (40%), 43 (100%)

Q3) Write notes on the following. (any three). **[6]**

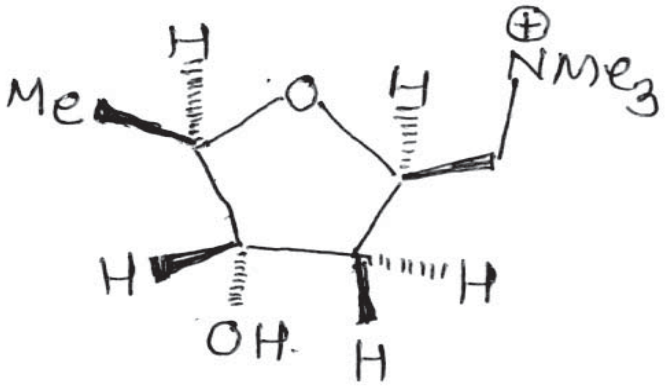
a) Nuclear overhauser Effect.

b) Chemical and magnetic shift equivalence in NMR

c) Attached proton Test

SECTION-II

Q4) a) Assign the chemical shifts to various protons in the given structure. Comment on the observed coupling constants and double resonance experiments. **[5]**



1.6 (d, J=6.5 Hz, 3H), 1.86 (ddd, J=12.5, 9.5 &
5.5 Hz, 1H), 2.02 (ddd, J=12.5, 6 & 2 Hz, 1H),
3.36 (S, 9H), 3.54 (dd, J=13 & 9 Hz, 1H),
3.74 (dd, J=13 & 1Hz, 1H), 3.94 (dq, J=6.5 &
2.5 Hz, 1H), 4.03 (m, 1H), 4.30 (d, J=3.5 Hz, 1H, exch.)
4.68 (m,1H)

Spin- decoupling Expt.

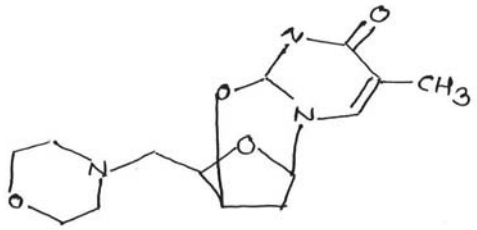
i) Irradiation at δ 3.92 Changes δ 4.03 → dd, 9.5 & 2 Hz

ii) Irradiation at 4.68 Changes δ 2.02 → dd, 12.5 & 2 Hz

Changes δ 1.86 → dd, 12.5 & 9.5 Hz

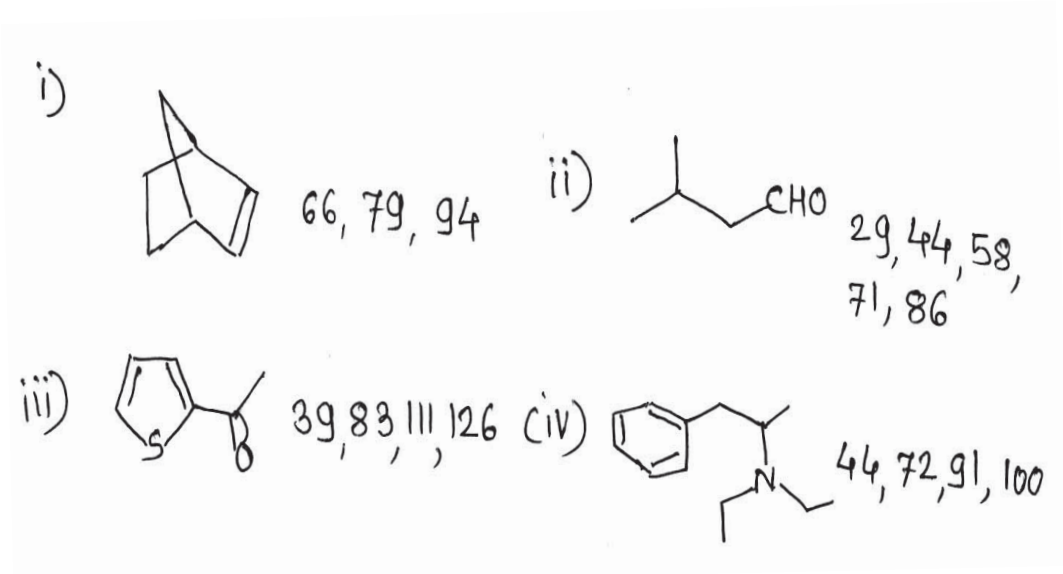
In NOe Expt. Irradiation at δ 1.6 increases the signal at δ 1.86 by 7 %

b) Assign the chemical shift to various carbons atoms. **[3]**



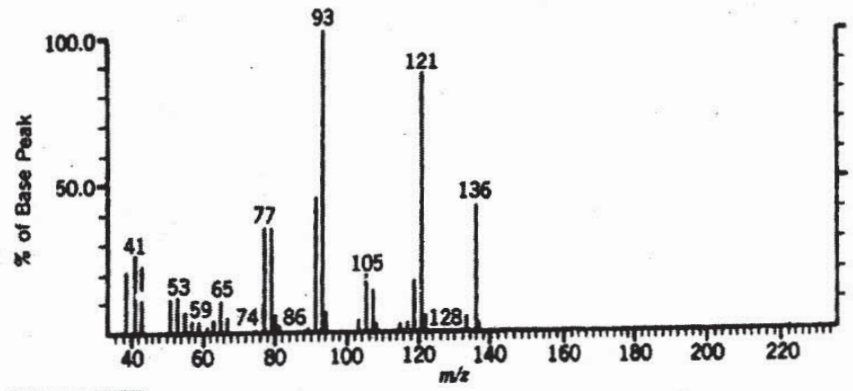
175.9 (s), 156.91 (s), 140 (d), 118.8 (s), 89.4 (d), 84 (d), 80.6 (d), 67.2(t), 59.1(t), 54.3 (t), 33.8 (t), 13.6 (q)

Q5) a) Write the genesis of the indicated ion for any three of the following.**[6]**

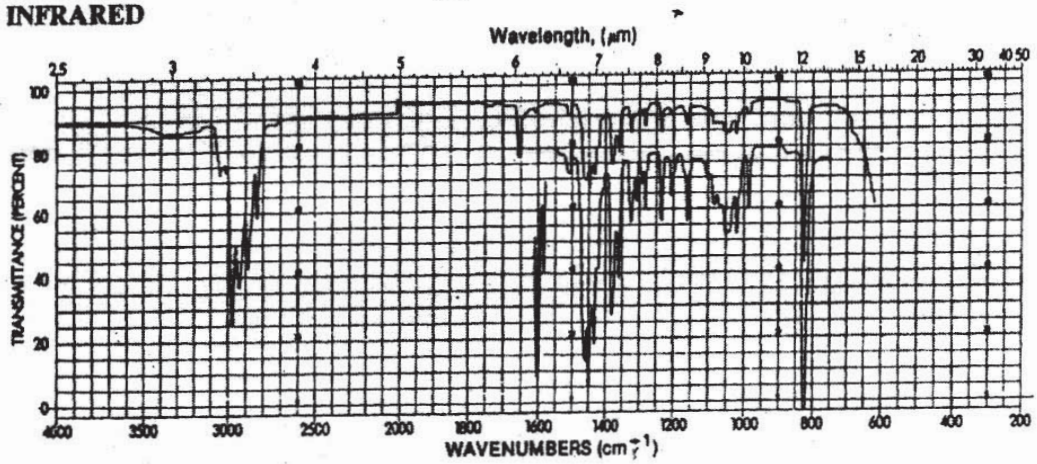


b) Differentiate between stokes and Anti-stokes Raman spectrum. **[2]**

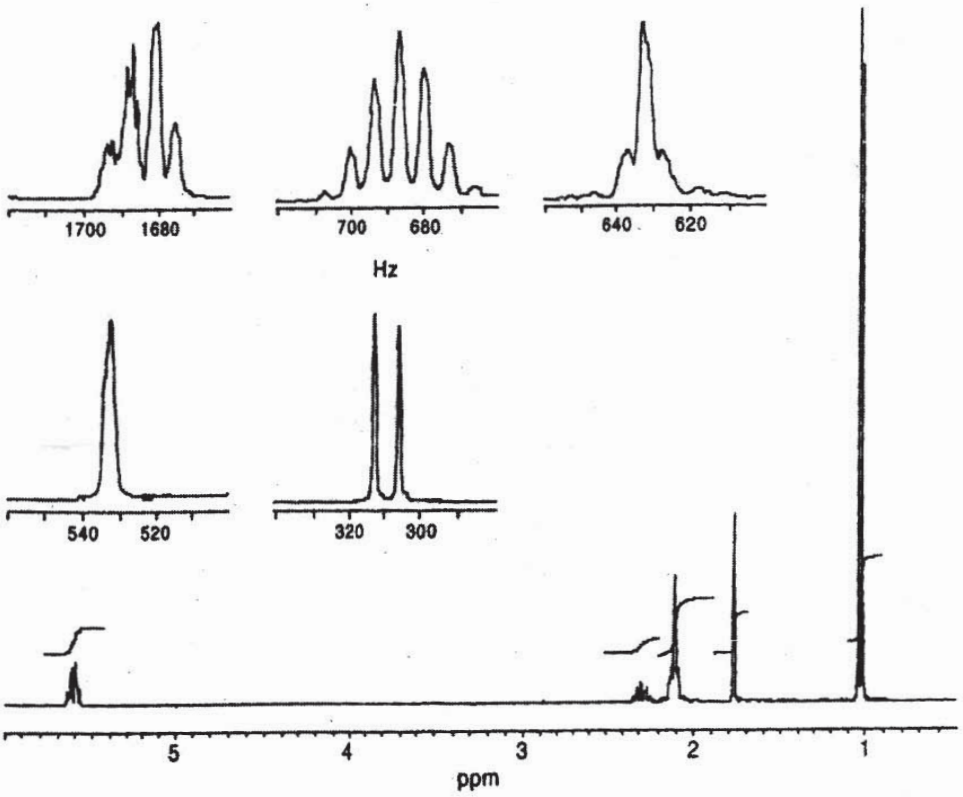
Q6) Deduce the structure of the compound whose spectral information is given on the next page **[9]**

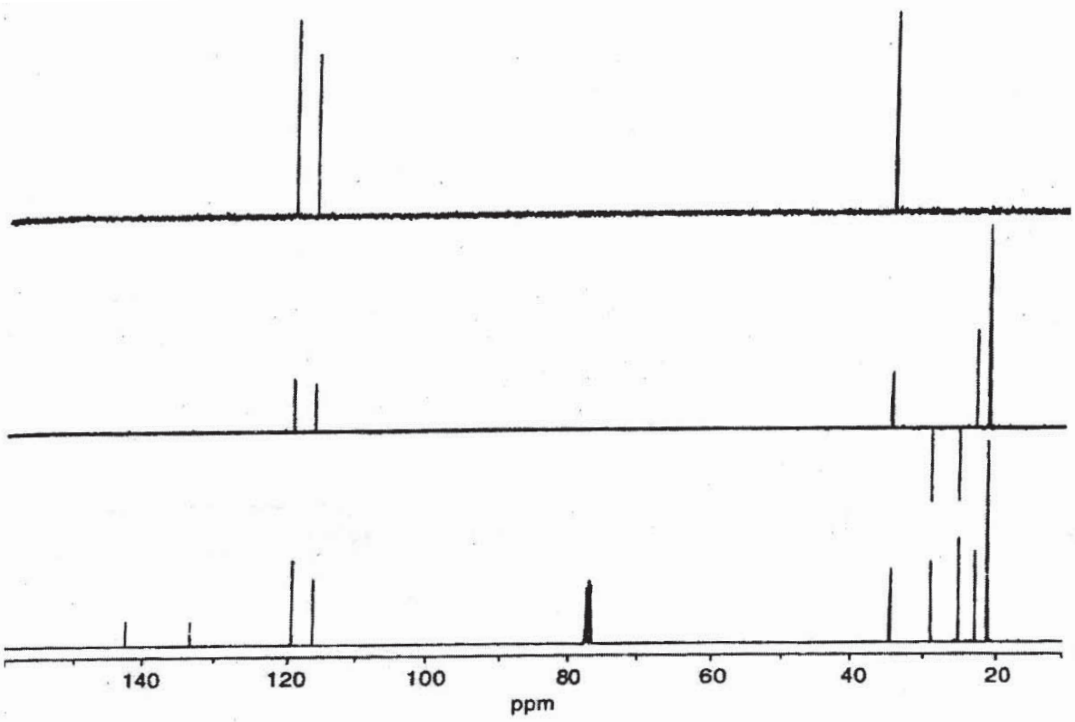


INFRARED

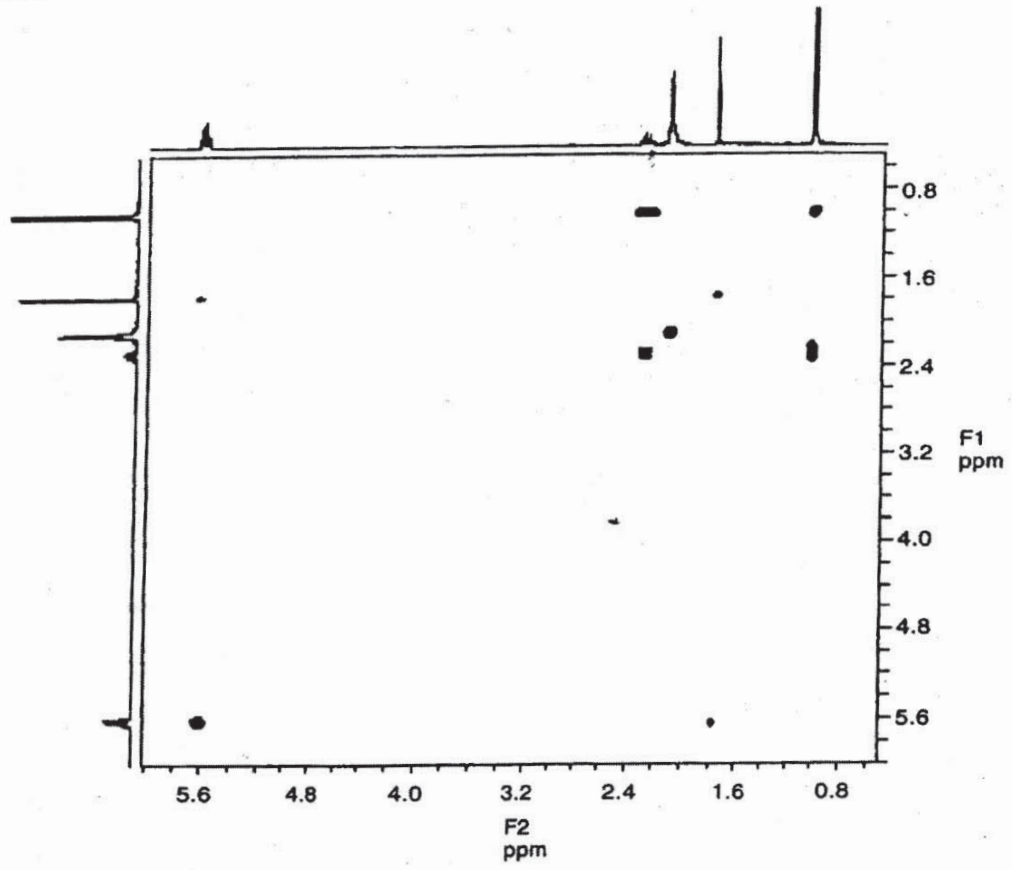


^{1}H NMR

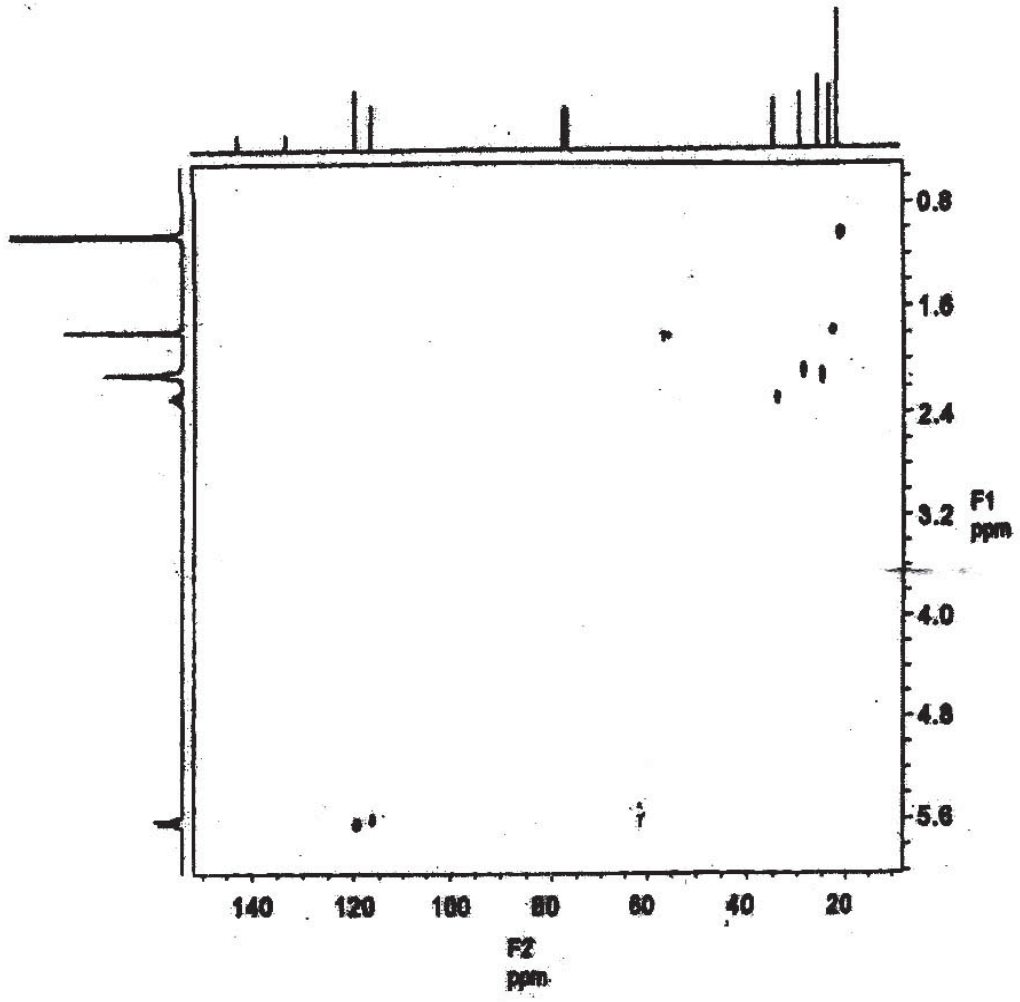



140
120
100
80
60
40
20
ppm

COSY


0.8
1.6
2.4
3.2
4.0
4.8
5.6
F1
ppm
5.6
4.8
4.0
3.2
2.4
1.6
0.8
F2
ppm

HETCOR



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Total No. of Questions : 6]

SEAT No. :

P1252

[Total No. of Pages : 2

[5432]-3003

M.Sc.

DRUG CHEMISTRY

CHD - 363 : Microbiology, Immunology & Drug Discovery & Development

(2013 Pattern) (Credot System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate answer book.***
3) ***Figures to right indicate full marks.***

SECTION - I

Q1) Attempt any three of the following: **[12]**

a) Describe various phases of Bacterial growth curve.
b) State the parts of a typical fermentor & give its use.
c) Describe any one method of antimicrobial assay.
d) Short note on: Classification of microbes.
e) What is strain improvement of microbes. Describe any one method of the same.

Q2) Attempt any three of the following: **[9]**

a) What are antibodies? Describe the structure of a typical antibody.
b) Briefly describe the cells involved in Immune system.
c) What are Immunosuppressants and immunomodulators, state their clinical significance.
d) Short note on: Immunoelectrophoresis / Double diffusion technique (any one).
e) Describe either type I or type II Hypersensitivity.

Q3) Explain any four of the following terms: **[4]**

a) Immunization
b) Cytokines
c) Efficacy
d) Potency
e) Drug target
f) MIC

P.T.O.

SECTION - II

Q4) Answer any three of the following: **[12]**

a) Explain the following.

i) Chronic toxicity studies.

ii) Genetotoxicity studies.

b) What is solid dosage forms? Explain it's types with examples.

c) What is lead? Discuss the need for lead development.

d) Explain all the phases involved in clinical trials?

e) Define pharmacokinetics of drug action. What factors affect the bioavailability of a drug.

Q5) Answer any two of the following: **[8]**

a) What is patent? Make a comment on patentable inventions.

b) Define following with example.

i) Bioavailability

ii) Bioequivalence

c) What is bioassay? Write the necessity and type of Bioassay.

Q6) Answer any two of the following: **[5]**

a) Ayurveda system of medicine.

b) Pharmacoepia.

c) Pharmacophore Identification.

Total No. of Questions : 6]

SEAT No. :

P1253

[Total No. of Pages : 3

[5432]-3004

M.Sc.

DRUG CHEMISTRY

CHD - 364 : Stereochemistry Asymmetric Synthesis and Pericyclic Reactions

(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Answers to the two sections should be written in separate answerbooks.***

SECTION - I

Q1) Answer any four of the following : **[10]**

a) Bromo comphor fails to undergo dehydrobromination an treatment with base. Explain.

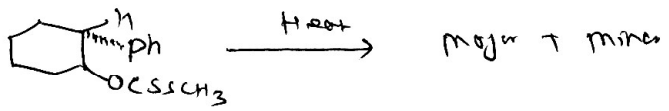
b) Explain why chair-boat interconversion is more focile in cyclohexanene then in cyclohexane.

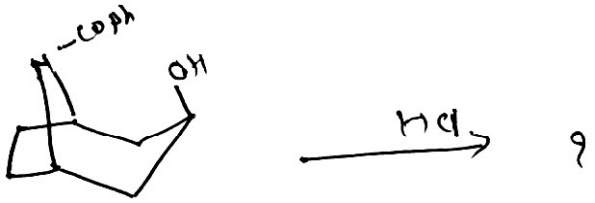
c) 1, 2, 2, 6, 6 - Penta methyl-4-hydroxy-4-penal piperidine more stable in boat conformation. Explain.

d) Draw the structures of Cis-t-trans and Cis-t-cis isomers of pehydrophenanthrene. Comment on their stability & optical activity.

e) Cis 4-t-butyl Cyclohexane carboxylic acid lactonise, where as trans isomer do not. Explain.

Q2) Predict the product/s and explain the stereochemical principles involves. (any four): **[10]**

a) 

b) 

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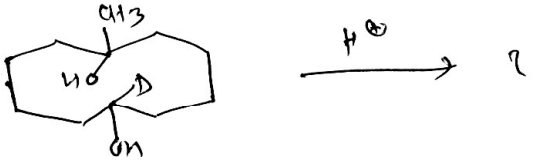
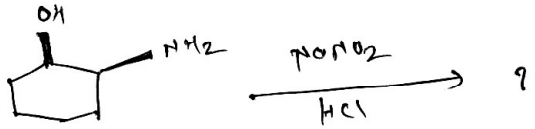
c) 

d) 

e) 

Q3) Write short notes on (any two) : **[5]**

a) Bredt's rule in Bridge compounds.

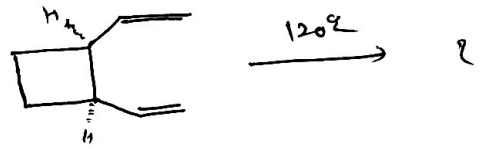
b) Trans annular interactions

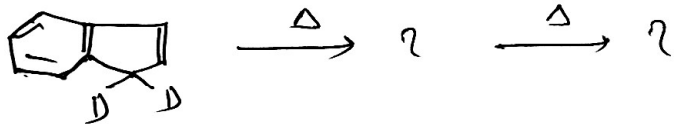
c) Von Auwer's skita rule

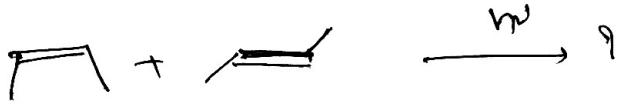
SECTION - II

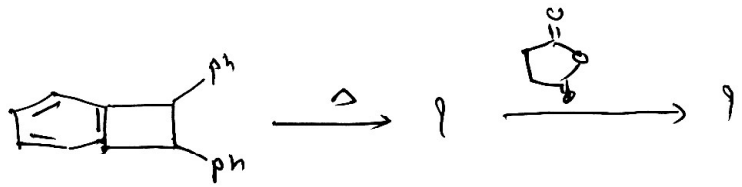
Q4) a) Draw correlation diagram of CON rotatry ring opening of 1,3-cyclohexa diene to 1,3,5, hexa triene predict the allowed process. **[4]**

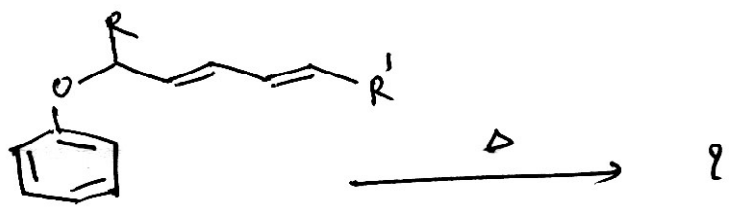
b) Predict the product/s in any four of the followings as justify your answer (any four) : **[6]**

i) 

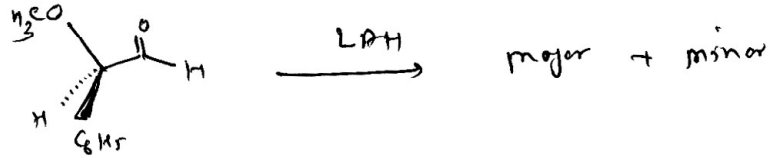
ii) 

iii) 

iv) 

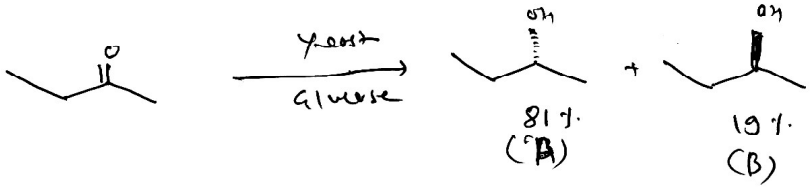
v) 

Q5) a) Attempt the following : **[4]**

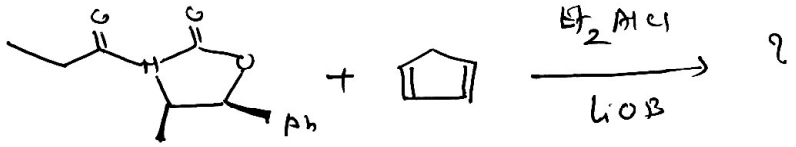
i) 

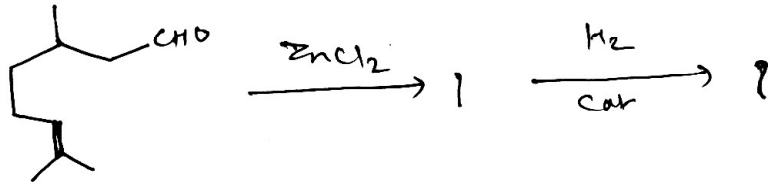
with the help of above reaction explain felkin arch model.

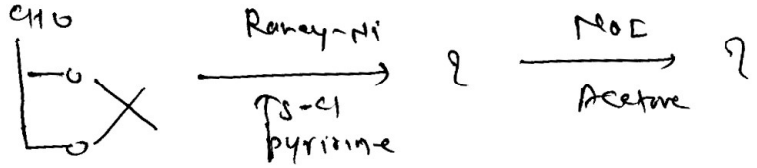
ii) Calculate the diastereomenc excess is the following reaction Products.

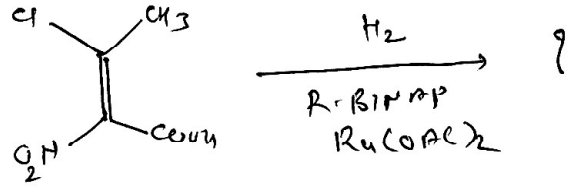


b) Complete the following reactions give the mechanism involves (any three)**[6]**

i) 

ii) 

iii) 

iv) 

Q6) Write short notes (any two) : **[5]**

a) Chiral borohydride

b) Asymmetric epoxidation

c) General methods of asymmetric synthesis

Total No. of Questions : 6]

SEAT No. :

P1254

[Total No. of Pages : 4

[5432]-4001

M.Sc. - II

DRUG CHEMISTRY

CHD - 461 : Advanced Organic Synthesis, Principles and Strategies (2013 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 50*

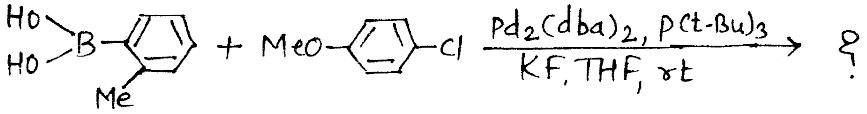
Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***

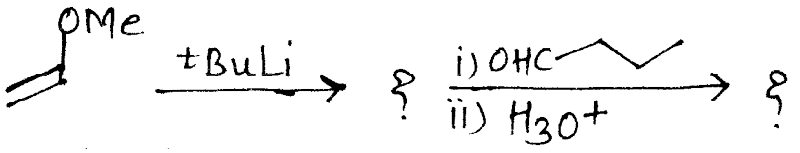
SECTION - I

Q1) a) Answer any three of the following: **[6]**

i) Predict the product



ii) Complete the following transformation.



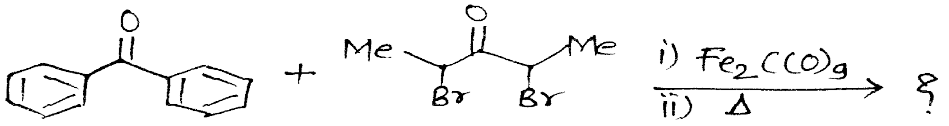
iii) Suggest the mechanism.

$$R_3B \xrightarrow[\text{ii) } H_2O_2,\ NaOH]{\text{i) } NaCN,\ (CF_3CO)_2O} R_3COH$$

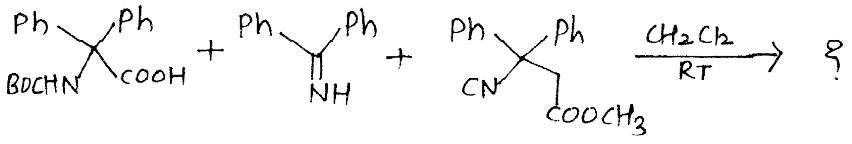
iv) Non-terminal alkenes can be converted to terminal alkenes using hydroboration reaction.

b) Predict the product for any two of the following reactions. **[4]**

i)



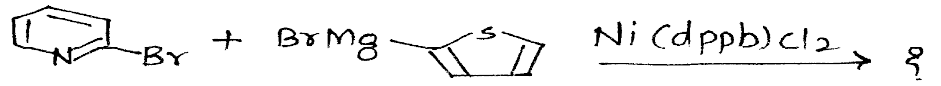
ii)

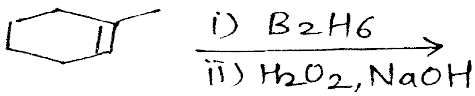


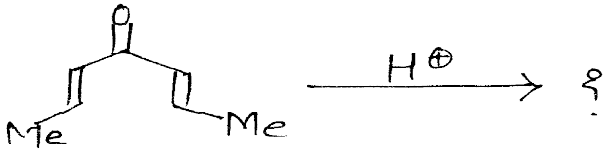
iii) $HC \equiv CH + CO + CH_3OH \xrightarrow{Ni(CO)_4} ?$

P.T.O.

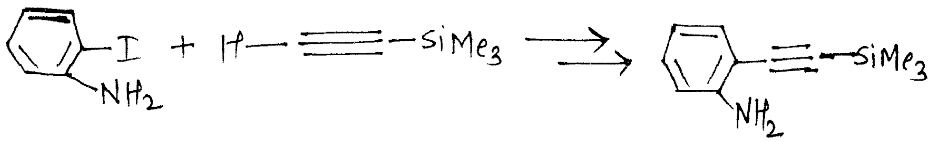
Q2) a) Predict the product and suggest a suitable mechanism for its formation. (any two) **[4]**

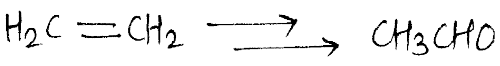
i) 

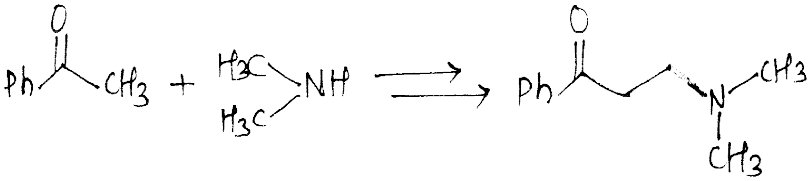
ii) 

iii) 

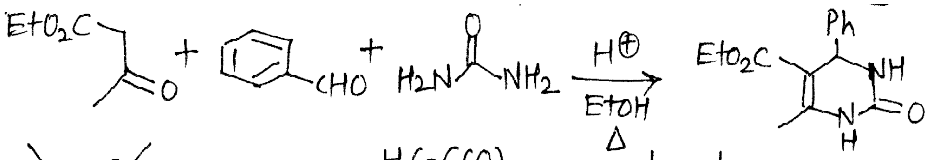
b) Carry out the following conversions and justify your answer. (any two) **[4]**

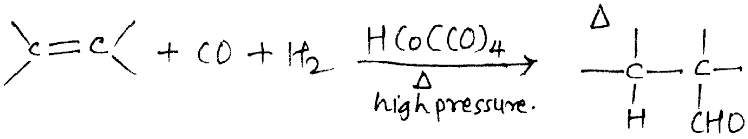
i) 

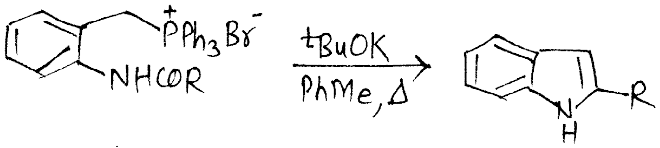
ii) 

iii) 

Q3) a) Explain the mechanism for <u>any two</u> of the following. **[4]**

i) 

ii) 

iii) 

b) Write short note on <u>any two</u>: **[3]**

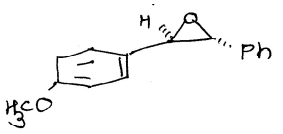
i) Sharpless azides cycloaddition.

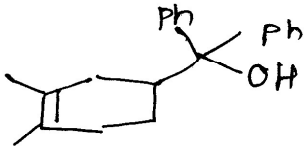
ii) Bergmann cyclization.

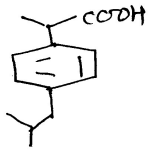
iii) Stille coupling.

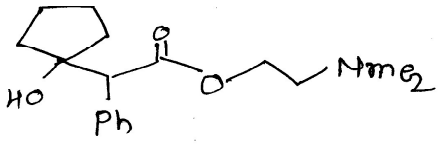
SECTION - II

Q4) Using retrosynthetic analysis suggest a suitable method to synthesize <u>any three</u> of the following. **[9]**

i) 

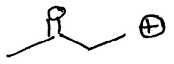
ii) 

iii) 

iv) 

Q5) a) Answer <u>any two</u> of the following. **[4]**

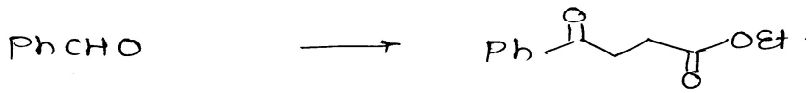
i) Give one reaction with a reagent for each synthon given below.

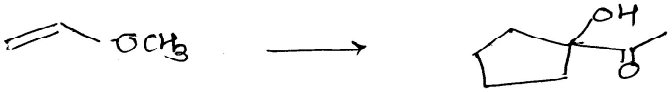
a)  b) 

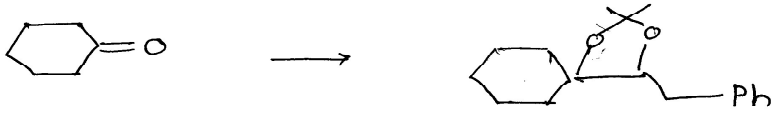
ii) Discuss three methods for the carbon-carbon double bond formation.

iii) Benzyl oxy carbonyl protection is preferred over benzyl group for protection of $-NH_2$ group of amino acid in peptide synthesis.

b) Complete the following transformation. (any two) **[4]**

i) 

ii) 

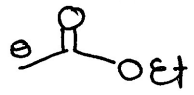
iii) 

Q6) a) Answer <u>any two</u> of the following: **[4]**

i) Atom economy in Green Chemistry.

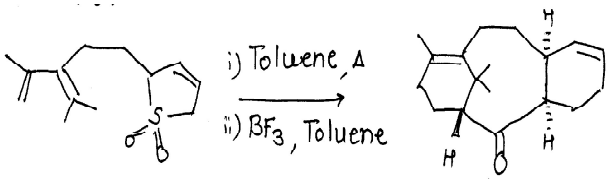
ii) MOM ether protection is preferred over methyl ether protection for protection of hydroxyl group.

iii) Give one reaction with a reagent for each synthon given below.

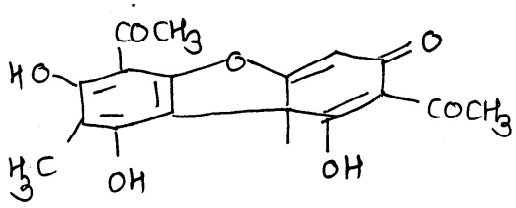
a) 

b) 

b) i) Explain the advantages of cascade reaction. Write the steps involved in the following reaction. **[2]**



ii) Explain the biomimetic approach to the retrosynthesis of the following **[2]**



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Total No. of Questions : 6]

SEAT No. : ____

P1255

[Total No. of Pages : 3

[5432]-4002
M.Sc. - II
DRUG CHEMISTRY
CHD - 462 : Advanced Medicinal Chemistry
(2013 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right side indicate full marks.***

SECTION - I

Q1) Answer any three of the following. **[9]**

a) Give a brief account of macrolide antibiotics. Explain the development of Clarithromycin, Roxithromycin and Azithromycin from Erythromycin.

b) Discuss in brief the discovery of carbapenems. Discuss their mechanism of action and uses.

c) Explain in brief the life cycle of DNA - virus.Discuss how Indinavir, AZT, Acyclovir and amantidine exhibit their activity.

d) Explain any one of the following. Mention at least one class of drugs used in its management with mode of action.

i) Leprosy

ii) Candidiasis

Q2) Answer any two of the following. **[10]**

a) Explain intra and interneuronal signal transmission.Discuss how following classes of drugs affect this process.

i) MAO Inhibitors

ii) Selective serotonine reuptake inhibitors.

b) Discuss in brief the role of the following class of compounds in cancer management.

i) Alkylating agents

ii) Antimitotics

iii) Plant products.

P.T.O.

c) Discuss the following in brief. (any two)

i) Enzyme inhibitors as drug.

ii) Sedatives.

iii) Fluoroquinolones.

Q3) Discuss in brief any three of the following. **[6]**

a) Mechanisms of drug resistance.

b) Aminoglycosides.

c) Membrane disruptors as antifungal agents.

d) Convulsions.

SECTION - II

Q4) Explain / Answer any three of the following. **[9]**

a) What are common GIT disorders ? Give the brief overview of the following GIT disorders and at least one drug of choice to treat them.

i) Peptic Ulcers

ii) Constipation

iii) Emesis

b) Explain the life cycle of plasmodium and explain the role of mefloquin and pyrimethamine as antimalarials and their mechanism of actions.

c) What is diabetis ? How NIDDM differs from IDDM.Explain how oral hypoglycemic agents control the blood sugar level.

d) Explain in brief the treatment of following.

i) Tuberculosis

ii) Pain

Q5) Answer any two of the following. **[10]**

a) Explain in brief any two of the following cvs disorders. Discuss the pathophysiological changes and at least one drug to treat them.

i) Stroke

ii) Angina Pectoris

iii) Myocardial Infarction.

b) Explain how following group of compounds help in management of disease (any three)

i) Cardiac glycosides

ii) Selective cox - 2 Inhibitors

iii) Ca^{2+} blockers

iv) Sulphonamides.

c) How does the endocrine system maintain homeostasis.Explain the role of prolactin, aldosterone, TSH, oxytocin, parathyroid hormone.

Q6) Give the mode of action and uses of following drugs. (any three) **[6]**

a) Rosiglitazone

b) Pyrazinamide

c) Cefalexin

d) Domperidone

e) Methotrexate

f) Itraconazole

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Total No. of Questions : 6]

SEAT No. :

P1256

[Total No. of Pages : 2

[5432]-4003
M.Sc. - II
DRUG CHEMISTRY
CHD - 463 : Principles and Applications in Drug Design
(2013 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Answer any three of the following : **[9]**

a) Explain Hybridoma technology with schematic diagram.

b) Explain Gene therapy. How it can be used in cancer treatment?

c) Define the following :

i) Affinity.

ii) Efficacy.

iii) Potency.

d) What is Antisense technology? How it can be used to treat viral diseases?

Q2) Answer any three of the following : **[12]**

a) Describe signalling mechanism for the tyrosine kinase receptor family.

b) Discuss the Receptor theories of drug action.

c) Enlist the various Recombinant DNA produced Medicinal agents or products from the following :

i) Enzymes.

ii) Vaccines.

d) Define combinatorial chemistry. Discuss how it will helps to synthesize large number of compounds.

Q3) Write short notes on any two of the following : **[4]**

a) Design of Agonists.

b) Prodrugs.

c) Database handling.

P.T.O.

SECTION - II

Q4) Answer any three of the following : **[9]**

a) Discuss in brief of the following :

i) Free Wilson method.

ii) Topliss scheme.

b) What is Parallel synthesis? Explain Haughton's tea bag procedure.

c) Comment on the structure of 7-TM Receptor with schematic diagram.

d) What is need for prodrug design? Explain with suitable examples.

Q5) Answer any three of the following : **[12]**

a) How are the following are calculated or determined experimentally in QSAR.

i) E_S

ii) Optimum log P

iii) σ

iv) π

b) Explain mix and split method used in combinatorial chemistry.

c) Discuss of the following :

i) Monte Carlo sampling.

ii) Systematic search.

d) Explain De Novo design method used in designing of molecules when structure is unknown.

Q6) Write short notes on any two of the following : **[4]**

a) Design of Enzyme inhibitors.

b) Craig plot.

c) Drug target.

Total No. of Questions : 9]

SEAT No. :

P1257

[Total No. of Pages : 3

[5432]-4004

M.Sc. - II

DRUG CHEMISTRY

CHD - 464 A : Bioinformatics, Cheminformatics and Biostatistics in Drug Discovery and Design

CHD - 464 B : Current Trends in Organic Chemistry, Supramolecular, Green Chemistry, Photochemical and Free Radical Reactions

CHD - 464 C : Entrepreneurship Development and Project Management

(2013 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Attempt any two of the 464 A, 464 B, 464 C sections only.***
2) ***Each section is for 25 marks.***
3) ***All questions are compulsory.***
4) ***Answer to the two sections to be written in separate answer books.***
5) ***Figures in right indicate maximum marks.***

SECT[ION - I

(CHD - 464 A : Bioinformatics, Cheminformatics and Biostatistics in Drug Discovery and Design)

Q1) Answer any three of the following: **[12]**

a) A hen lays eight eggs. Each egg was weighed and recorded as follows.
60, 56, 61, 68, 51, 53, 69, 54.
Calculate mean, standard deviation.

b) The percentage of $CaCO_3$ content of 10 soil samples is as follows. Find the variance
10, 8, 7, 8, 4, 9, 12, 13, 16, 14.

c) The following table shows the amount of diesel required by a vehicle to travel certain distances.

Distance *x* (km)	90	150	230	310	390
Distance *y* (Litres)	19.2	33.9	49.0	79.5	89.9

Calculate Karl Pearson correlation coefficient.

P.T.O.

d) Define the following:

i) Median
ii) Chi-square test
iii) Standard deviation
iv) Coefficient of variation

Q2) Attempt any two of the following: **[8]**

a) Short note on Metabolomics.
b) Describe the type of Biological databases.
c) "Chembioinformatics can be used in drug design"- Justify with example.

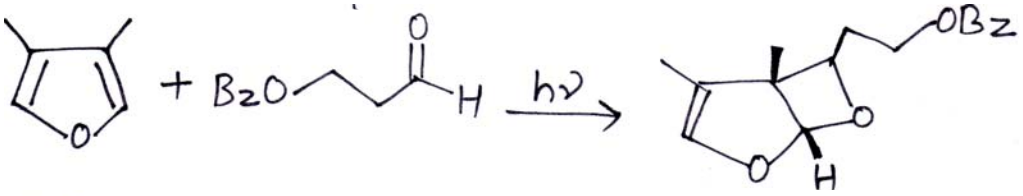
Q3) Attempt any two of the following: **[5]**

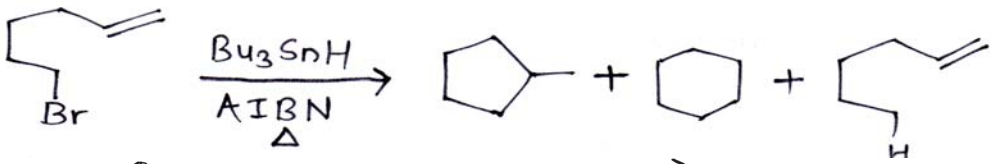
a) Short note on : Gene prediction programs.
b) Give the use and significance of canonical representations in cheminformatics.
c) Briefly describe the concept of proteomics.

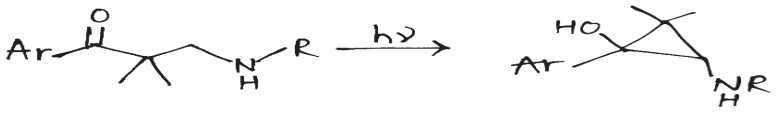
SECTION - II

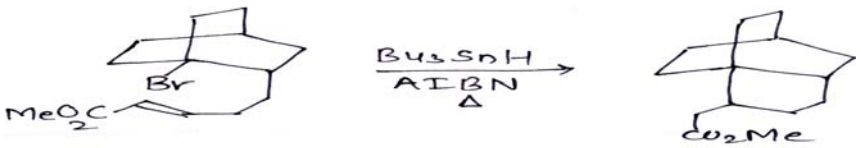
(CHD - 464 B : Current trends in Organic Chemistry : Supra-molecular, Green Chemistry, Photochemistry, and Free Radical Reactions)

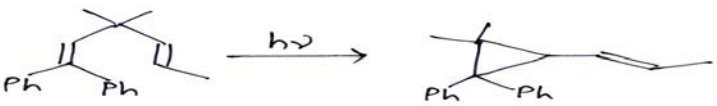
Q4) Suggest the mechanism and explain the following. (any five) **[10]**

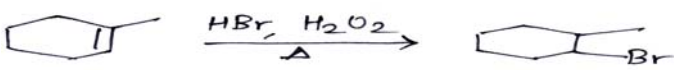
a) 

b) 

c) 

d) 

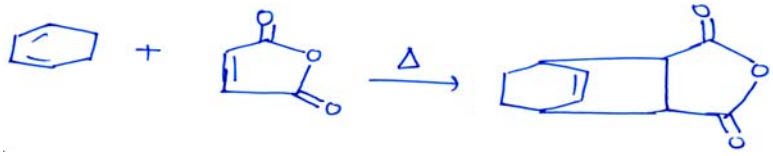
e) 

f) 

Q5) Solve the following (any four) **[10]**

a) What are ionic liquids? Give examples of organic reactions involving the use of ionic liquids.

b) Define atom economy. Calculate atom economy for following reaction.



c) Give spherical recognition - cryptates of metal ion.

d) Write the applications of Green Chemistry in organic synthesis.

e) Make a comment on microwave assisted solvent free reactions with suitable examples.

Q6) Answer the following. (any two) **[5]**

a) What is captodative effect? Explain the factors affecting stability of free radicals.

b) Photo-Fries rearrangement.

c) "Cryptands", - make a comment.

SECTION - III

(CHD - 464 C : Entrepreneurship Development and Project Management)

Q7) Write short notes on <u>any three</u> of the following: **[6]**

a) Entrepreneurship Development Process.

b) Organization and Management.

c) Corporate Entrepreneurship.

d) Creativity and Innovation.

Q8) Answer <u>any three</u> of the following: **[9]**

a) 'Entrepreneurship does not emerge spontaneously', Discuss in brief.

b) Opportunities for small entrepreneurs in India. Explain.

c) 'Profit is the reward of Entrepreneur'. Comment on the statement.

d) Differentiate between a manager and Entrepreneur.

Q9) Answer <u>any two</u> of the following: **[10]**

a) Give a brief account of factors affecting entrepreneural growth.

b) What are the contents of a business plan? Explain in details.

c) Explain the problems faced by Women Entrepreneurs.

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