Total No. of Questions :6]

SEAT No. :

P2239

[Total No. of Pages : 4

[4825]-301
M.Sc.
DRUG CHEMISTRY
CHD-361: Chemistry of Heterocycles and Drug Synthesis
(2013 Pattern) (Semester-III)

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

Instructions to the candidates:

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

SECTION-I

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

a) 2-Nitrofuran is less reactive towards acids than furan itself.

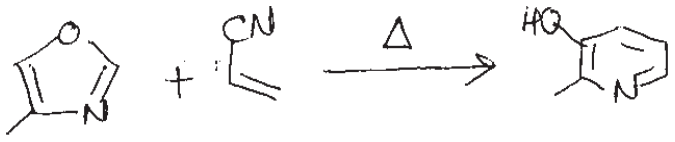
b) 4-chloropyridine could be prepared from pyridine-N-oxide.

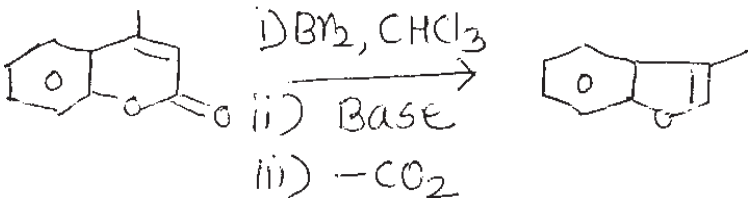
c) N-acetyl pyrrole undergoes cycloaddition reaction with acetylene dicarboxylate but pyrrole does not.

d) 1,3-Azoles show electrophilic substitution reaction at C_4 whereas 1,2-azoles at C_3.

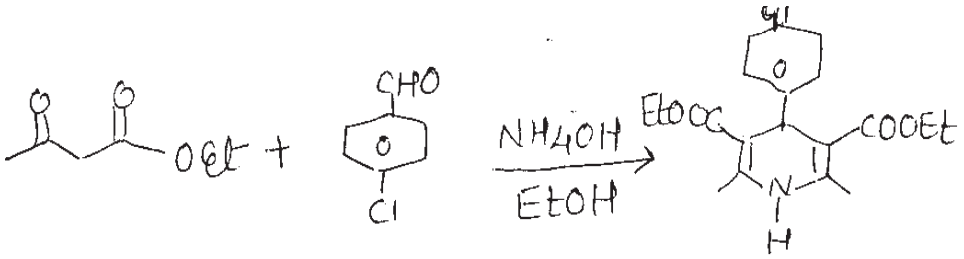
e) Reaction of 2,4=dichloropyrimidine with NaOMe in MeOH gives 4-substituted product.

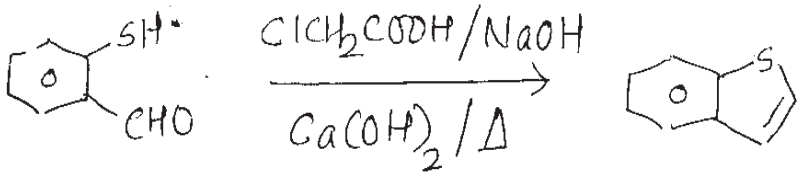
Q2) Suggest the suitable mechanism for any four of the following. **[8]**

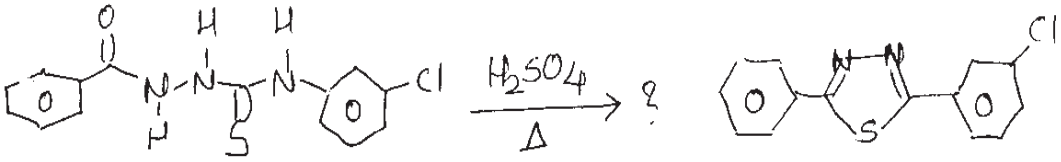
a) 

b) 

P.T.O.

c) 

d) 

e) 

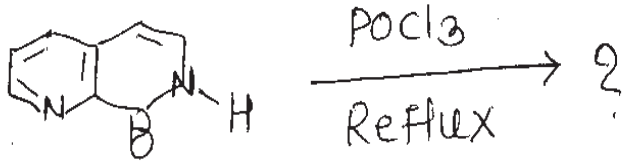
Q3) a) Write short notes on any two of the following. **[5]**

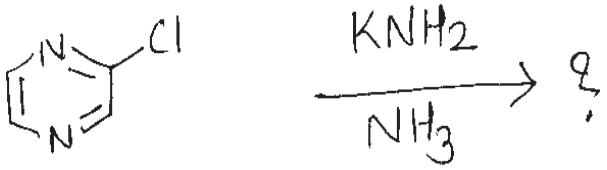
i) Hantzsch thiazole synthesis.

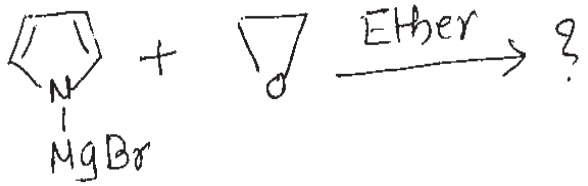
ii) Fischer Indole synthesis.

iii) Skraup Quinoline synthesis

d) Predict the products for any two of the following. **[4]**

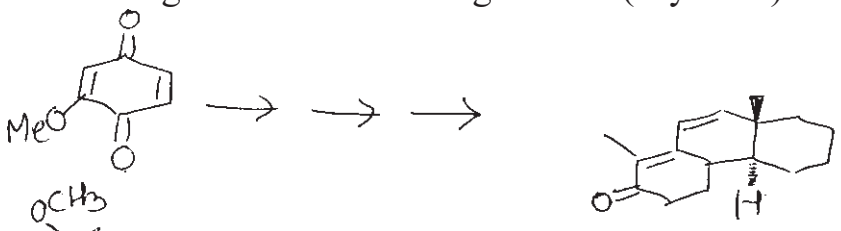
i) 

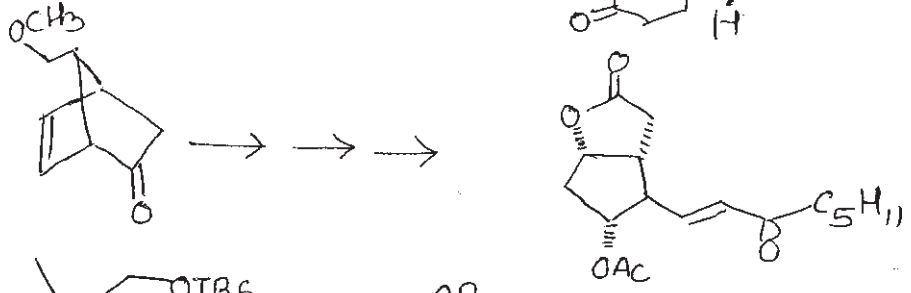
ii) 

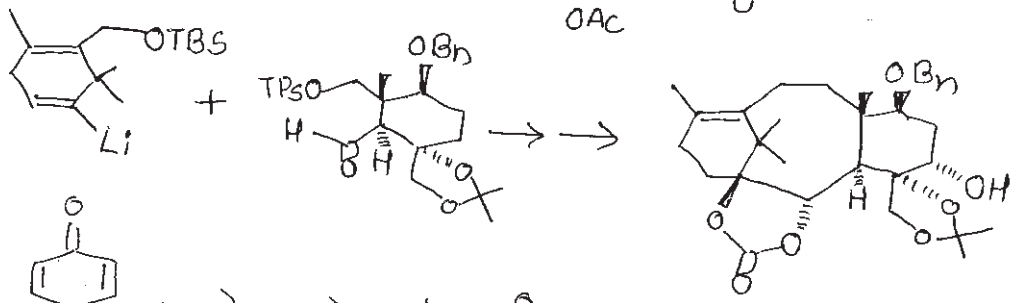
iii) 

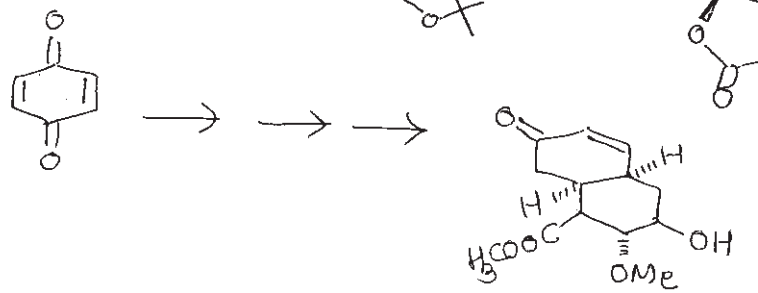
SECTION-II

Q4) Discuss the steps involved in the following transformations. Comment on the steps indicating mechanism and reagent used (any three). **[12]**

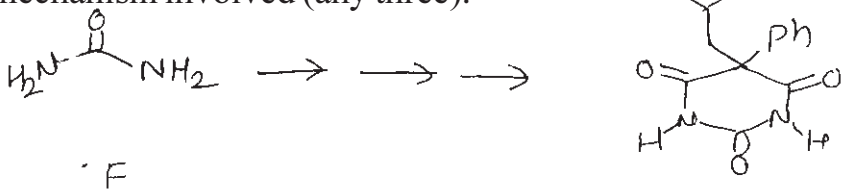
a) 

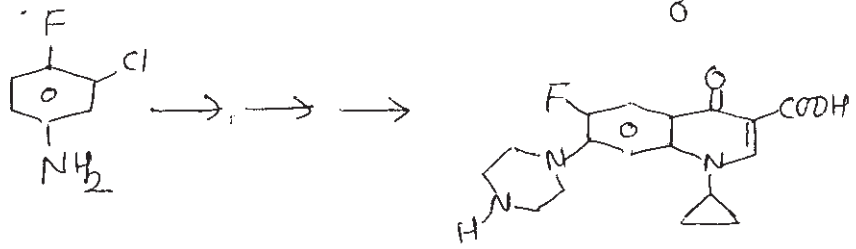
b) 

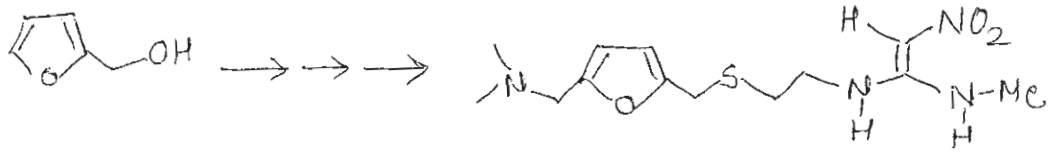
c) 

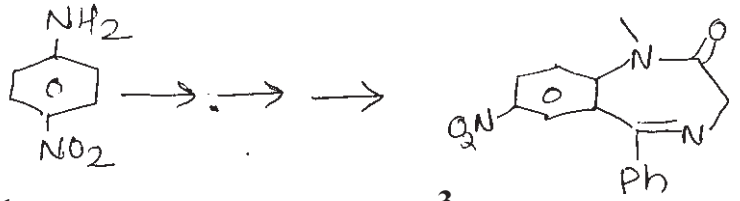
d) 

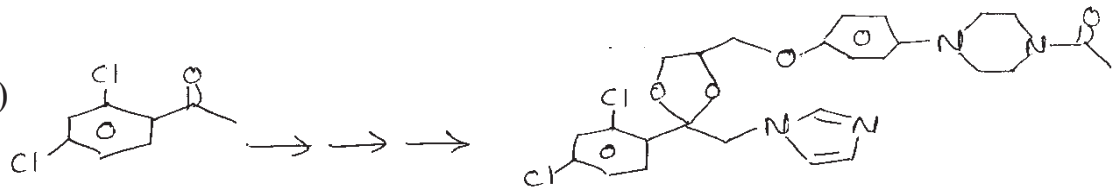
Q5) Discuss the steps involved in the synthesis of following drug molecules. Explain the mechanism involved (any three). **[9]**

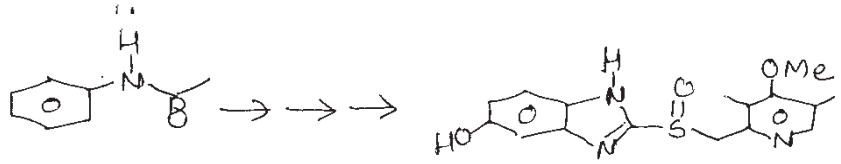
a) 

b) 

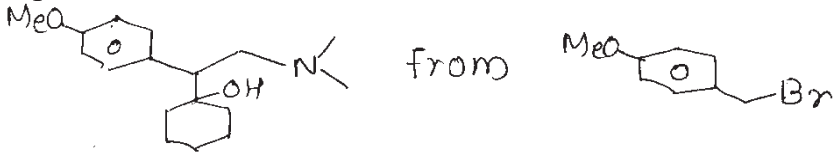
c) 

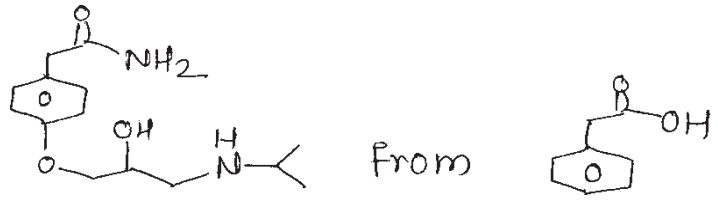
d) 

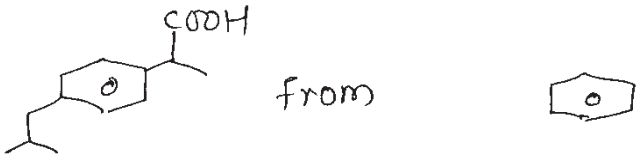
e) 

f) 

Q6) Devise a synthetic pathway for any two of the following from the starting compound shown. **[4]**

a) 

b) 

c) 

Total No. of Questions :6]

SEAT No. :

P2240

[Total No. of Pages :6

[4825]-302

M.Sc.

DRUG CHEMISTRY

CHD - 362: Advanced Analytical Methods

(2013 Pattern) (Semester - III)

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

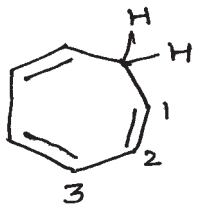
Instructions to the candidates:

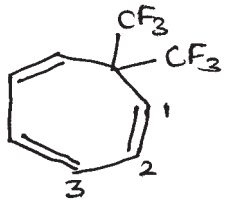
1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right side indicate full marks.***

SECTION -I

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

i) In cycloheptatriene $J_{2,3}$ is 5.3 Hz, where as in its bistrifluoromethyl derivative $J_{2,3}$ is 6.9 Hz. Explain.





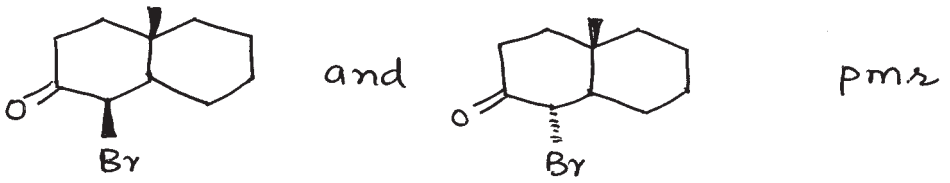
ii) DEPT is advantageous than APT. Explain.

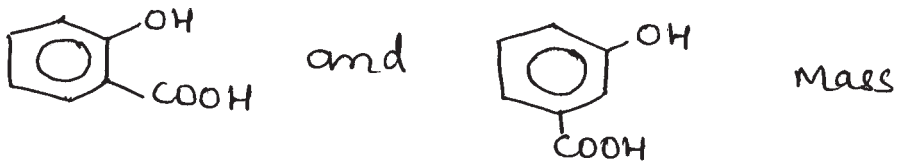
iii) $CH_3\ CH_2O\ CH = CH_2$ shows a strong peak at m/z = 44. Explain.

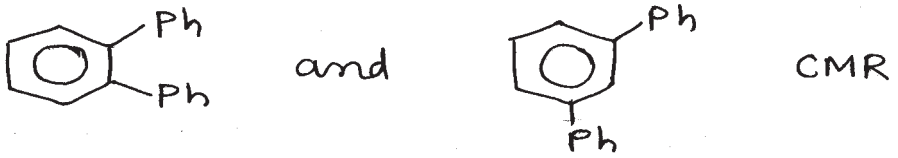
iv) Differentiate the following using ^{13}C-NMR.

P.T.O.

b) Distinguish between the following pairs using the indicated spectral methods (Any Two): **[3]**

i) 

ii) 

iii) 

Q2) Answer <u>any four</u> of the following: **[10]**

a) Deduce the structure whose spectral data is provided

Mol. Formula : $C_{10}H_{15}N$

CMR : 10.2 (q) 20.1 (q) 29.6 (t) 49.7 (d) 113 (d, str.) 116 (d) 129 (d, str.) 148 (s)

b) Deduce the structure

M.F. : $C_5H_{10}O_2$

PMR : 4.1 (s, 4H) 1.5 (s, 6H)

CMR : 25 (q, str.) 68 (t, str.) 95 (s)

c) Deduce the structure from the following data

M.F. : $C_7H_{14}O_2$

I R : 1111 cm^{-1}

Mass : m/e = 130, 85, 57

CMR : 15 (q, str.) 60 (t,str.) 101 (d) 118 (t) 135 (d)

d) Assign the structure consistant with the spectral data given

M.F. : $C_5H_9NO_4$

IR : 1642 cm^{-1}

Mass : 147, 102, 84

PMR : 2.3 (m, 2H), 2.7 (m,2H) 4.1 (t, 7Hz, 1H) 4H exchangeable

CMR & DEPT : 25 (down), 30 (down) 55 (up) 174 (absent) 178 (absent)

e) Assign the structure

IR : 1715 cm^{-1}

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

Q3) Write notes on <u>any two</u> of the following: **[6]**

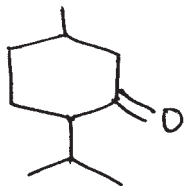
a) Time of Flight Analyzer

b) Spin - spin coupling

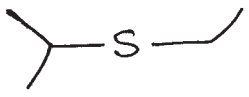
c) Nuclear Overhauser Effect

SECTION -II

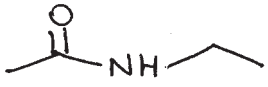
Q4) a) Write the genesis of the ions (any three): **[6]**

i) 

112, 84, 69

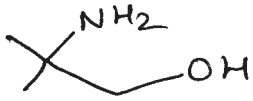
ii) 

104, 89, 61, 47

iii) 

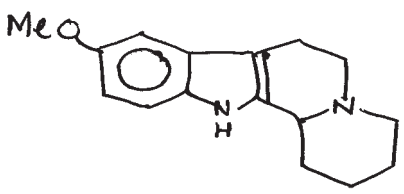
87, 72, 43, 30

iv)  138, 95, 58, 43

v)  74, 58, 31

b) Three isomeric compounds with molecular formula $C_6H_{14}O$ shows base peaks at 56, 45 and 59. Write the possible structures of the three isomers. Justify your answer. **[2]**

Q5) a) Assign the signals to various carbons of compound Y. **[3]**



Y

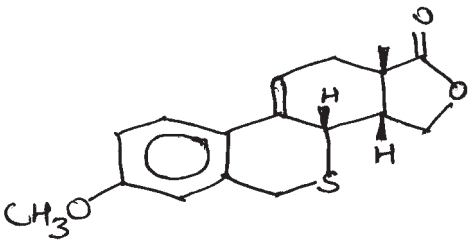
137(s) 136(s) 128(s) 121(d)

118(d) 117(d) 111(d) 106(s)

61(d) 56(t) 55(q) 54(t)

30(t) 26(t) 25(t) 22(t)

b) Assign the following signals to different protons in compound Z. Use the decoupling experiment to justify your answer. **[4]**



1.46(s, 3H) 2.3(m, 2H)

2.76(m, 1H) 3.46(d, 2Hz, 1H)

3.74(s, 3H) 3.8(s, 2H)

3.94(t, 8Hz, 1H) 4.3(t, 8Hz, 1H)

6.02-6.18(m, 1H) 6.58(d, 4Hz, 1H)

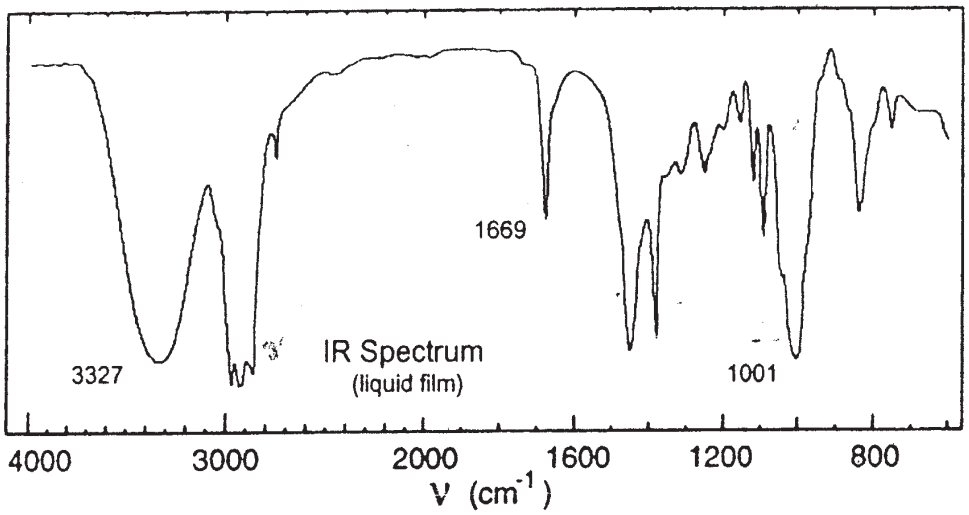
6.72(dd, 8& 4Hz, 1H) 7.3(d, 8Hz, 1H)

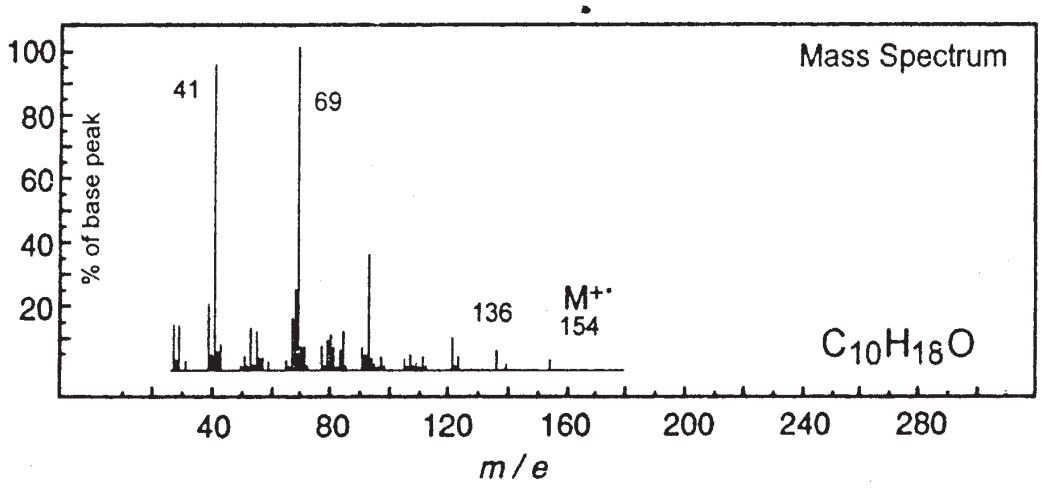
Decoupling Expt:

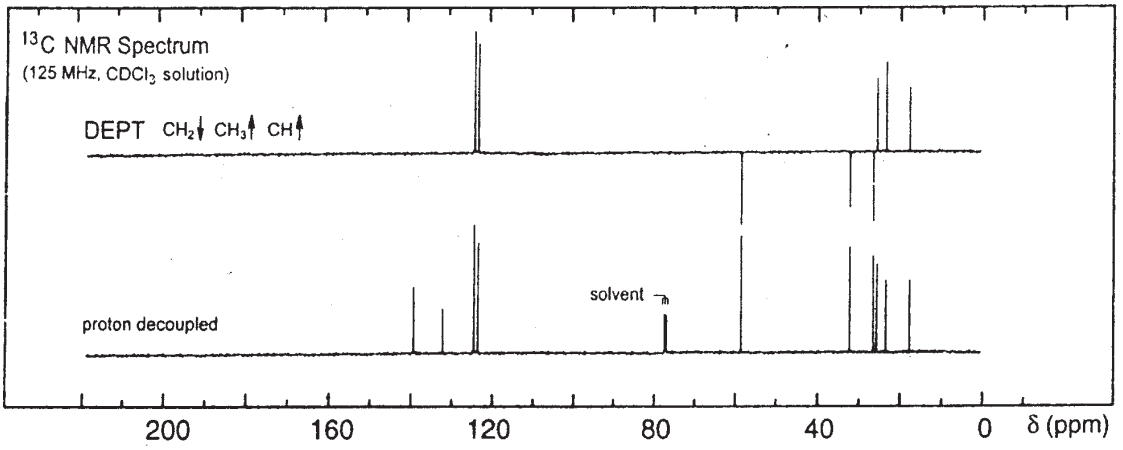
Irradiation at	Change at
6.1	2.3 (less no. of lines)
2.76	3.46 (d $\rightarrow$s)

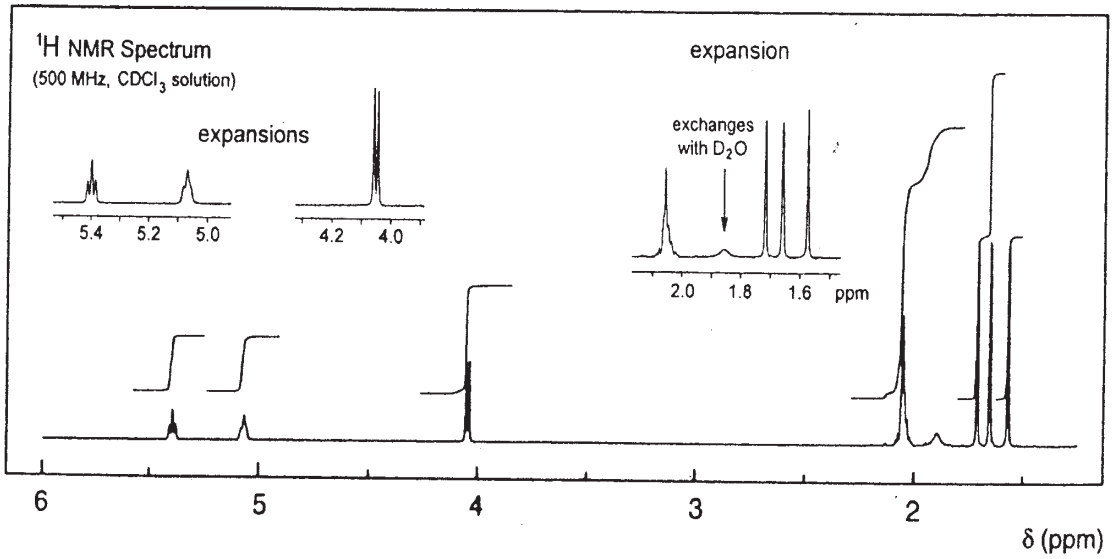
c) Distinguish between ESR and NMR spectroscopy. **[2]**

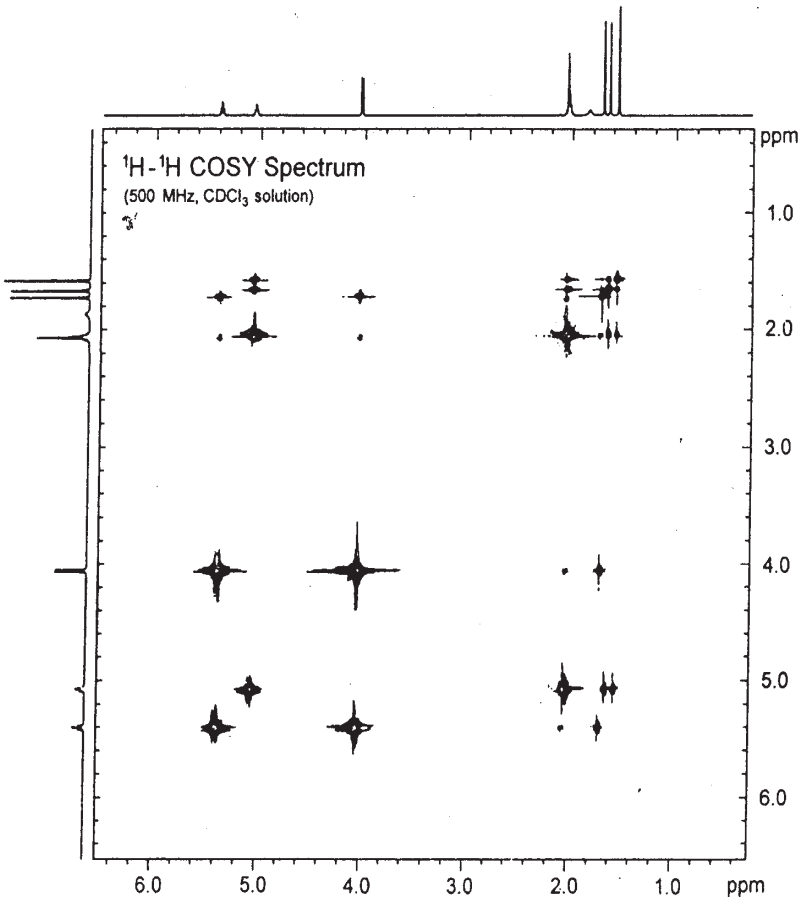
Q6) A compound exhibits following spectral properties shown on the attached sheet. Suggest the structure for the compound and explain the observed spectral data. **[8]**








^{1}H NMR Spectrum
(500 MHz, $CDCl_3$ solution)
expansions
5.4 5.2 5.0
4.2 4.0
expansion
exchanges with D_2O
2.0 1.8 1.6 ppm
6 5 4 3 2
δ (ppm)


^{1}H-^{1}H COSY Spectrum
(500 MHz, $CDCl_3$ solution)
ppm
1.0
2.0
3.0
4.0
5.0
6.0
6.0 5.0 4.0 3.0 2.0 1.0 ppm

EEE

Total No. of Questions : 6]

SEAT No. :

P2241

[Total No. of Pages : 3

[4825]-303
M.Sc.
DRUG CHEMISTRY
CHD - 363 : Drug Discovery and Development, Microbiology, Immunology
(Semester - III) (2013 Pattern)

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

Instructions to the candidates:

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

SECTION - I

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

a) Explain growth curve of bacteria under nutrient-limiting conditions.

b) Describe different carbon sources used in nutrient media.

c) What is strain improvement? Describe general principles used in strain improvement?

d) Explain chemical treatment process for effluent of fermentation industry.

e) Give advantages and disadvantages of diffusion and turbidometric bioassays.

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

a) Explain the mechanisms of innate immunity.

b) Describe structure and function of lymph node.

c) Give the characters and role of T and B lymphocytes.

d) Describe the symptoms of IgE-mediated hyper sensitivity.

e) Explain the principle of Radio Immuno Assay.

P.T.O.

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

a) Immuno modulator

b) Interferon

c) Agonist

d) Candidate drug

e) Potency

f) Vaccination

SECTION - II

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

a) Discuss in brief the strategies adopted for lead discovery with examples. What is the need for lead development.

b) With proper examples explain how inviro & invitro bioassays are performed.

c) Explain pharmacokinetics of drug action. What factors affect the bioavailability of a drug.

d) What is a patent? What are the requirements to obtain a patent? What are the remedies for patent infringments?

e) Give a brief account of the toxicological tests performed on an NCE.

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

a) Describe in brief the aims of phase I & phase II of clinical trials? How are they performed.

b) Give a brief account of the functions of R & D & process development in a pharmaceutical industry?

c) How are drugs metabolised in human body? Discuss the reactions of phase I & phase II metabolism?

Q6) Explain the following in brief (<u>any five</u>): **[5]**

a) IPR

b) Acute toxicity

c) Pharmacoepia

d) Safety Equipments

e) Ayurveda

f) QSAR

g) Post marketing surveillance

Total No. of Questions :6]

SEAT No. :

P2242

[Total No. of Pages : 4

[4825]-304
M.Sc. - II
DRUG CHEMISTRY
CHD-364: Stereochemistry, Assymmetric Synthesis and Pericyclic Reactions
(2013 Pattern) (Semester-III)

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

Instructions to the candidates:

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

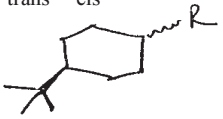
SECTION-I

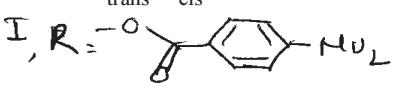
Q1) Answer any four of the following. **[10]**

a) Give the preferred conformations of four tetramethyl cyclohexanes given below. Calculate the enthalpy and indicate the stability of these compounds.

b) In 3 and 4 member rings SP^2-SP^3 is more focile process, where as in 5 memeber rings SP^3-SP^2 is focile. Explain.

c) Consider the energy levels of ground and transition states, to explain why $k_{trans}|k_{cis}$ =2.5 for I, while k_{trans}/k_{cis} = 20 for II.

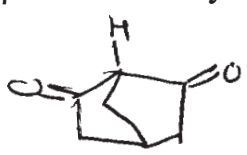




II, R = $-COOC_2H_5$

d) Reduction of Camphor with LAH gives mainly isoborneol. Explain with stereostructures.

e) Compound I do not show acidic property, also compound II (β-keto carboxylic acid) do not undergo decarboxylation. Explain.



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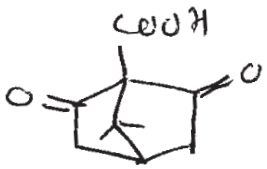
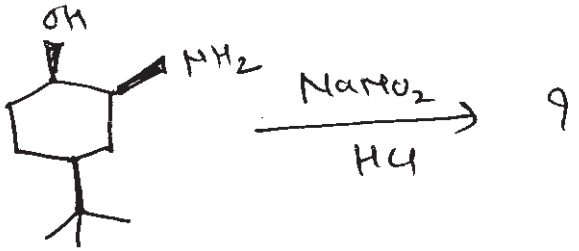
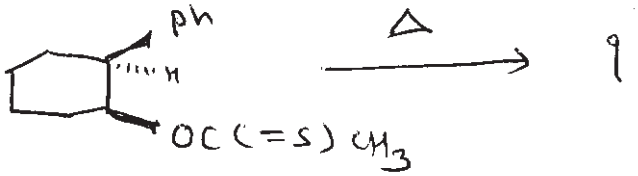


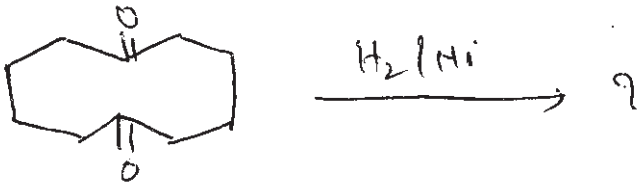
II

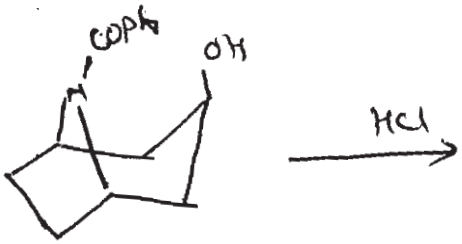
P.T.O.

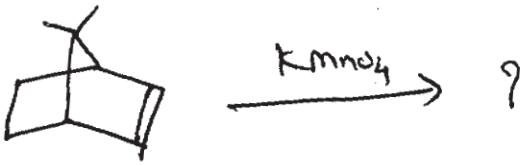
Q2) Predict the product/s is any four of the following and explain the stereochemical principles involved. **[8]**

a) 

b) 

c) 

d) 

e) 

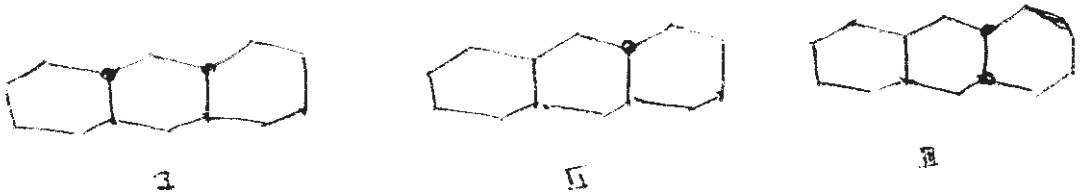
Q3) a) Explain the following. **[4]**

i) Concept of I-strain

ii) Van Auwers-Skita rule with exceptions.

d) Draw the stereostructures of following. **[3]**

Molecules, write nomenclature with their stability.



SECTION-II

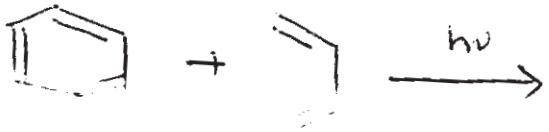
Q4) a) Construct the correlation diagram for disrotatory opening of cyclohexadiene to hexatriene, predict the allowed process on the basis of conservation of orbital symmetry. **[3]**

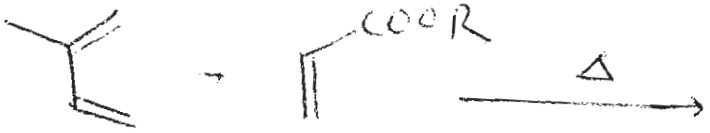
b) Predict the products and explain the stereochemistry (any four). **[6]**

i) 

ii) 

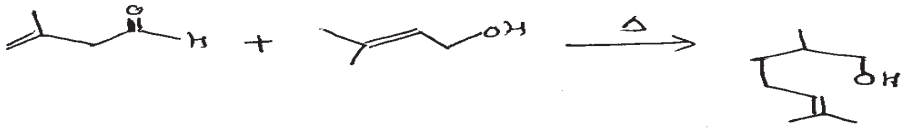
iii) 

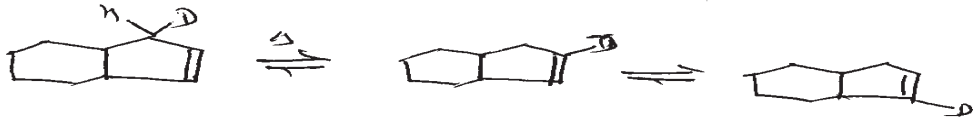
iv) 

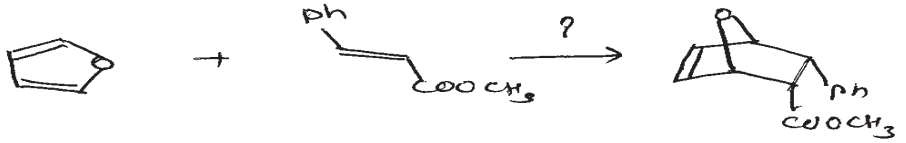
v) 

vi) $CH_2=CH-COOCH_3 + CH_2N_2 \xrightarrow{\Delta} ?$

Q5) a) Predict the product/s & explain the stereochemical principles involved (any two) **[3]**

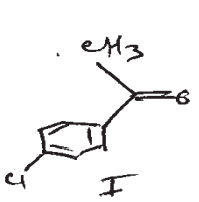
i) 

ii) 

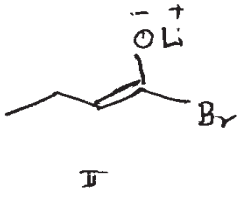
iii) 

b) Write short note on Cram's rule with example. **[2]**

i) Identify Re and Si faces from the following **[1]**

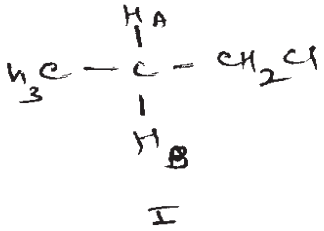


I



II

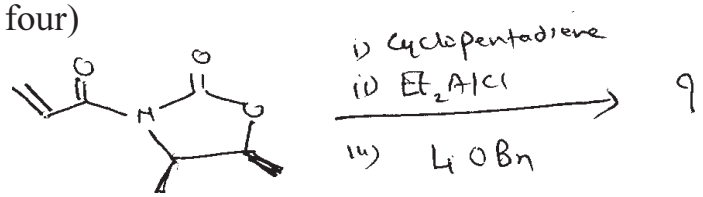
ii) Write pro-R and pro-S for I **[1]**



I

Q6) a) Predict the product/s and suggest stereochemical principles involved (any four) **[6]**

i)



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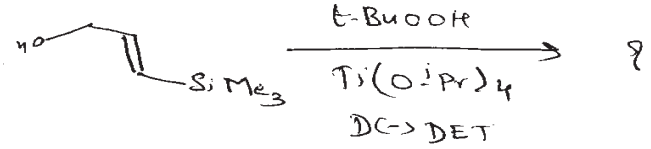

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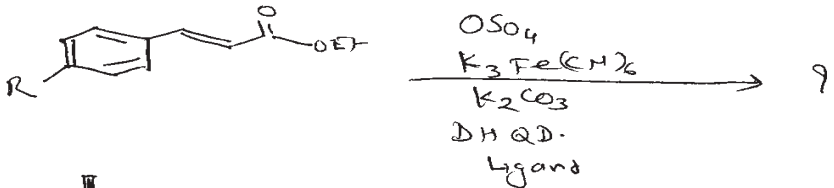

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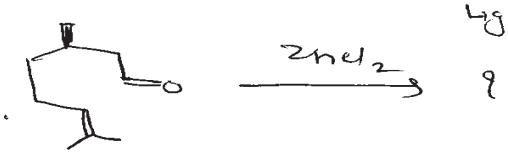
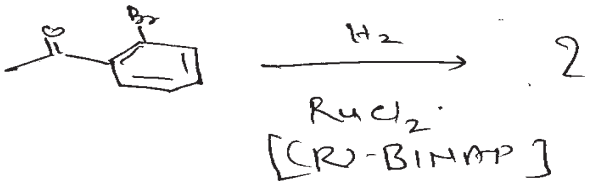


v)



b) Write short note on (any two). **[5]**

i) Chiral auxilary

ii) Asymmetric aldol condensation

iii) Chiral purity

Total No. of Questions : 6]

SEAT No. :

P2243

[Total No. of Pages : 4

[4825]-401

M.Sc.

DRUG CHEMISTRY

CHD-461 : Advanced Organic Synthesis, Principles and Strategies

(2013 Pattern) (Semester-IV)

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

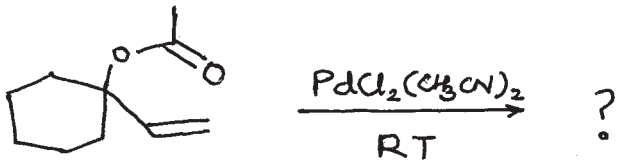
Instructions to the candidates:

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.***

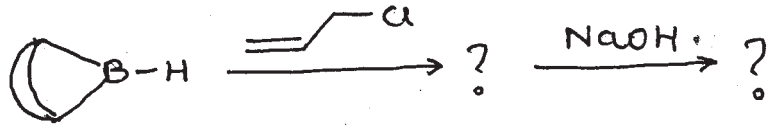
SECTION-I

Q1) a) Answer Any Three of the following: **[6]**

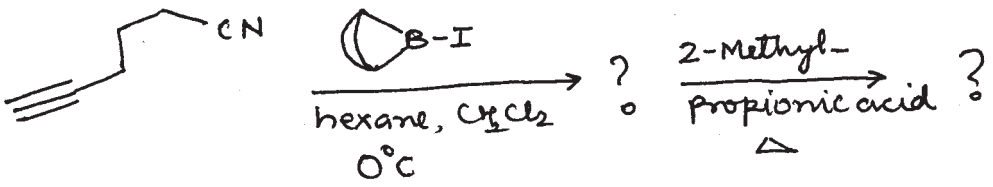
i) Predict the product



ii) Complete the following transformation.



iii) Write the intermediate and the product.



iv) Explain organoalanes reacts with epoxides to give Markownikov's product while organs aluminates gives anti-Markownikov's product.

P.T.O.

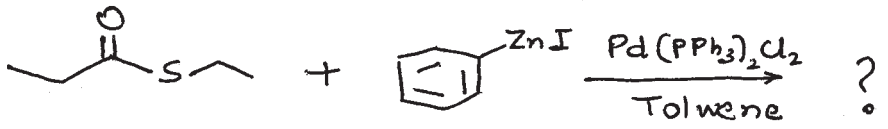
b) Explain Any Two of the following: **[3]**

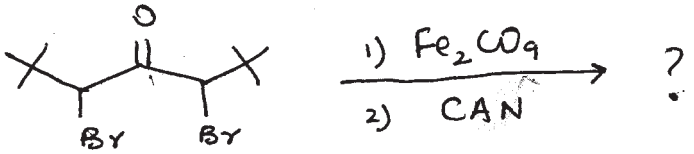
i) Organo boranes can be used to synthesize chiral alcohols.

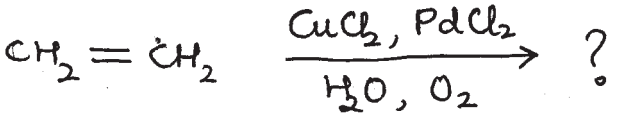
ii) Organophosphorus compounds can be used for the conversion of hydroxyl into halogen.

iii) Hetero atom directed lithiation reactions can be used to synthesize O-substituted Benzoic acid from benzoic acid.

Q2) a) Predict the product and suggest a suitable mechanism for its formation (Any Two): **[4]**

i) 

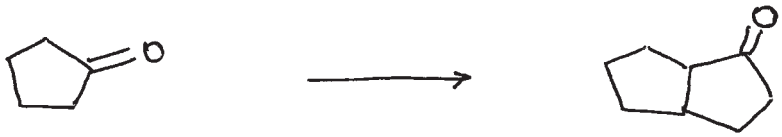
ii) 

iii) 

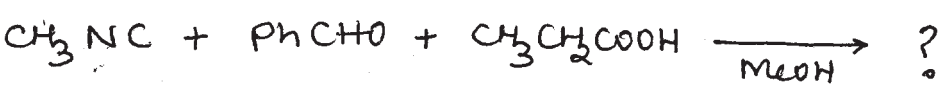
b) Carry out the following conversions and justify your answer (Any Two): **[4]**

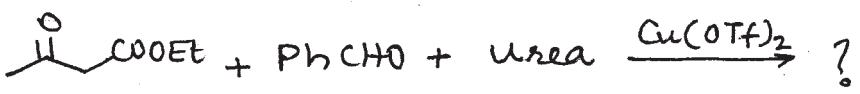
i) 

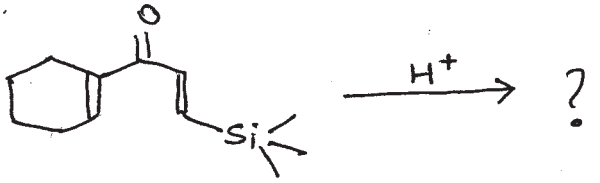
ii) 

iii) 

Q3) a) Write the product and suggest the suitable mechanism (Any Two): **[4]**

i) 

ii) 

iii) 

b) Write short note on Any Two of the following: **[4]**

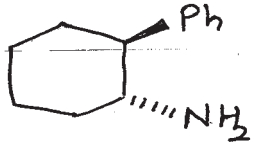
i) Assymmetric Mannich Reaction.

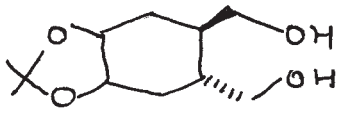
ii) Pausan - Khand Reaction.

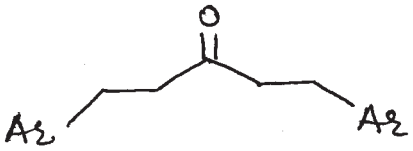
iii) Sharpless azide cycloaddition reaction.

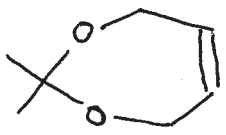
SECTION-II

Q4) Using retrosynthetic analysis, suggest the suitable method to synthesize Any Three of the following compounds. **[9]**

i) 

ii) 

iii) 

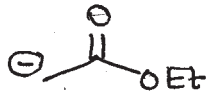
iv) 

Q5) a) Answer Any Two of the following: **[4]**

i) Carry out the following transformation by enamine approach.

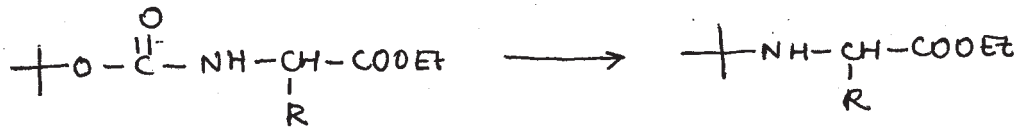
ii) Synthesize the following using umpolung method.

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

I) 

II) 

b) Complete the following transformations (Any Two): **[4]**

i) 

ii) 

iii) 

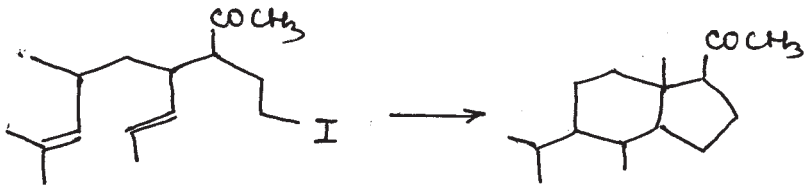
Q6) a) Answer <u>Any Two</u> of the following: **[4]**

i) Discuss the role of ionic liquids in organic synthesis.

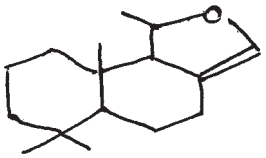
ii) MOM ether protection is preferred over methyl ether protection for protection of hydroxyl group.

iii) 1, 6-dicarbonyl compounds can be synthesized by reconnection approach. Explain.

b) i) Explain the steps involved in the following reaction. **[2]**



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



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Total No. of Questions :6]

SEAT No. :

P2244

[Total No. of Pages : 2

[4825]-402
M.Sc.
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 indicate full marks.***

SECTION-I

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

a) What are antibiotics? How are they classified? Explain why antibiotics are generally more selectively toxic than anticancer drugs.

b) Give a brief account of the strategies employed in the development of cephalosporins. Explain how these strategies helped to achieve the improved drugs.

c) Discuss in brief protein biosynthesis. Explain the steps where the antibiotics act with suitable example.

d) What are the different mechanisms of drug resistance? What are the therapeutic strategies to overcome drug resistance.

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

a) Explain cancer. Discuss in brief following classes of anticancer agents.

i) Alkylating agents

ii) Antimetabolites

iii) Intercalators

b) Discuss in brief the organization and working of CNS. What happens when the CNS activity is affected? What are the strategies to rectify CNS activity?

c) Discuss the following in brief.

i) Tuberculosis ii) AIDS iii) Candidiasis

P.T.O.

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

a) Uracil derivatives as anticancer agents.

b) Endocrine therapy in cancer.

c) Selective serotonin uptake in hibitors as antidepressants.

b) Quinoline derivatives as antimalarials.

SECTION-II

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

a) What is diabetis? How is the blood sugar level regulated in our body? How do sulfonylureas help to control BSL in NIDDM patients?

b) Explain pain mechanism. How does morphine act as an analgesic.

c) What is the function of GIT? Explain what happens in hyperacidity and ulcers.

d) Give a brief commentory on fungal diseases and role of azoles as antifungals.

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

a) Explain

i) Hypertension ii) Arrythmia

iii) Myocardial Infarction

and give one drug of choice for each one of them.

b) How does the endocrine system maintain healthy state of the body? Explain positive and negative feedback mechanism. What is the function of pitutary gland.

c) Explain how the following classes of drugs exhibit their therapeutic effect.

i) Corticosteroids ii) Cardiac Glycosides

iii) B-blockers iv) Statins

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

a) Ciprofloxacin

b) Acyclovir

c) Cis-platin

d) Domperidone

e) Diazepam

Total No. of Questions : 6]

SEAT No. :

P2245

[Total No. of Pages : 2

[4825]-403
M.Sc.
DRUG CHEMISTRY
CHD - 463 : Principles & 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 are to be written in separate answer books.***
3) ***Figures to the right indicate maximum marks.***

SECTION - I

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

a) Define the terms:

i) PCR ii) Vector iii) Restriction enzyme

b) How edible vaccines are designed?

c) Give applications of antisense therapeutic agents.

d) Give the principles used in development of DNA vaccines.

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

a) Discuss the case study how anticancer drug cis-platin etc. were designed or design of steroidal anti-inflammatory drugs.

b) How is combinatorial chemistry performed to design libraries? Explain in brief.

c) Discuss the basic features of prodrugs. Explain how these have improved absorption and reduced toxicity?

d) Discuss the function of 7-TM superfamilies. Explain their role in details the mechanisms involved.

P.T.O.

Q3) Answer any two of the following: **[4]**

a) Physicochemical factors involved in drug receptor interaction.

b) Receptor theories.

c) Peptidomimetic drug design.

SECTION - II

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

a) Explain in brief what is bioinformatics? How does it aid in drug design?

b) Give a brief account of molecular mechanics force field and energy minimizations done using MM.

c) Outline the steps in structure based drug design.

d) Explain i) Molecular electrostatic potentials.

ii) Quantum mechanics

iii) Monte Carlo Search

Q5) Answer any three of the following: **[9]**

a) Explain in brief the docking methods and virtual screening.

b) Explain the mechanism of ion channels.

c) Discuss how Craig's plot and batchwise approach can lead to drug design.

d) With proper examples explain the benefits prodrugs have over routine drugs.

Q6) Discuss any two of the following: **[4]**

a) Receptor theories of Drug action.

b) COMFA

c) Statistical tests in QSAR.

Total No. of Questions : 9]

SEAT No. :

P2246

[Total No. of Pages : 6

[4825]-404

M.Sc.

DRUG CHEMISTRY

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

CHD - 464B : Current Trends in Org.Chemistry, Supramolecular, Green Chemistry, Photochemical & Free Radical Reactions

CHD - 464C : Entrepreneurship Development and Project Management

(2013 Pattern) (Semester - IV)

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

Instructions to the candidates:

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

SECTION - I

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

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

a) Define mean for continuous frequency distribution. Also find arithmetic mean for the following frequency distribution.

Monthly Rent	500-700	700-900	900-1100	1100-1300	1300-1500
No.of Families	30	25	33	20	40

b) For the following data of age of husbands (X) and age of their wives (Y) in years given for 5 couples.

Couple No.	1	2	3	4	5
X	28	32	38	48	52
Y	26	29	34	42	50

P.T.O.

c) Explain the concept of variation in a statistical data. How standard deviation is used to measure it. Compute standard deviation for the following data of daily wages of 7 persons.

36, 29, 29, 25, 20, 25, 16

d) Explain the following:

i) Chi-square test.

ii) Inclusive method of classification.

iii) Open end classes.

iv) Negative correlation.

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

a) Define bioinformatics and write a note on biological databases.

b) What is chemoinformatics? Explain SMILE notations.

c) Define proteomics and explain the techniques used in proteomics.

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

a) Discuss in brief the steps involved in structure based drug designing.

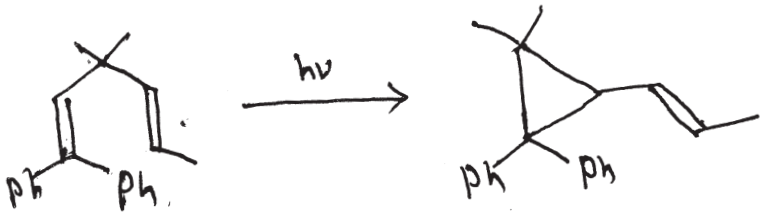
b) Applications of genomics.

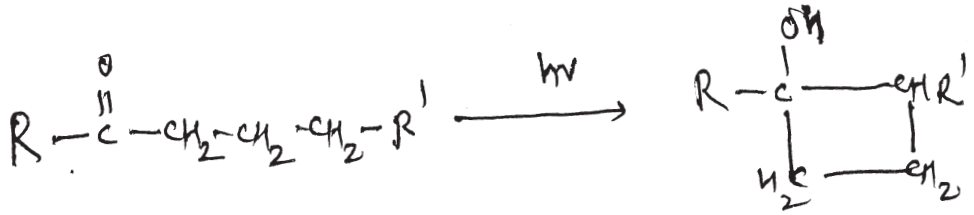
c) Docking.

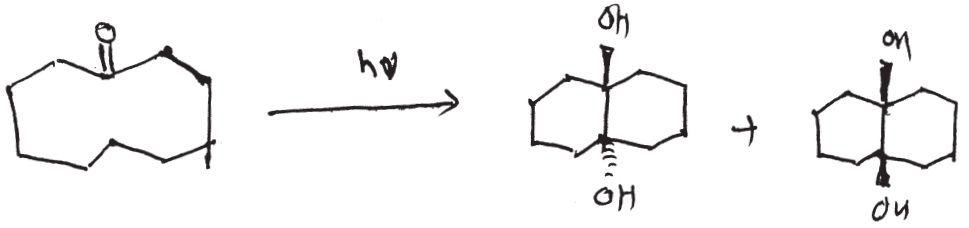
SECTION - II

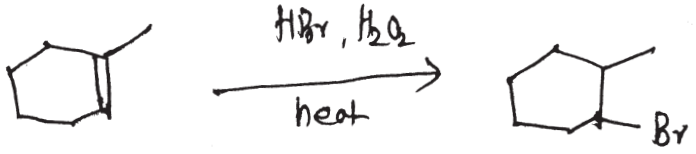
CHD - 464 B : Current Trends in Organic Chemistry : Supra-Molecular, Green Chemistry, Photochemistry & Free Radical Reactions

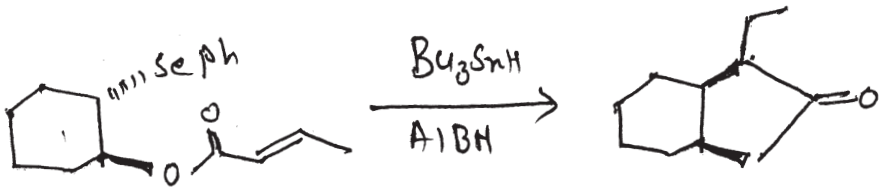
Q4) Suggest the Mechanism and explain the following (Any Five): **[10]**

a) 

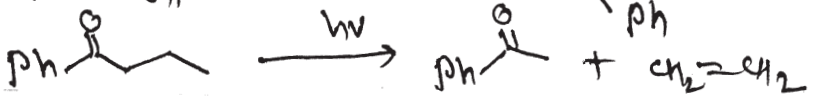
b) 

c) 

d) 

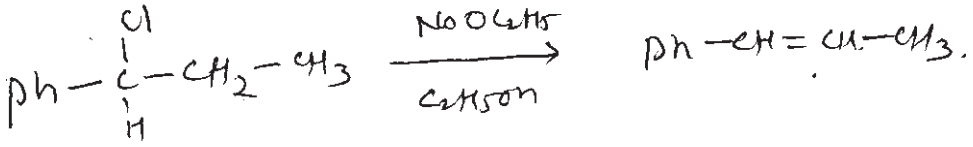
e) 

f) 

g) 

Q5) Solve the followings (Any Four): **[10]**

a) Explain the concept of Atom Economy. Calculate the % atom economy of following reaction.



b) Write short note on "Molecular Channels and transport process".

c) Explain solid state synthesis of flavones and Microwave Hoffman elimination.

d) Explain design principle and Supramolecular electronic device.

e) Give short account of Microwave assisted solvent free reactions with suitable examples.

f) Explain the role of Green Chemistry in day to day life.

Q6) Answer the followings: (Any two) **[5]**

a) Give the Methods for the generation of free radicals.

b) Write short note on Barton reaction.

c) Explain with examples, the photochemical aromatic substitution reactions.

SECTION - III

CHD - 464C : Entrepreneurship Development & Project Management

Q7) Answer any six of the following MCQ's: **[6]**

a) This kind of entrepreneurs and characterised by readiness to adopt successful innovations created by innovative entrepreneurs.

i) Imitative ii) Traders

iii) Innovative iv) Agripreneurs

b) According to _____ innovation is an important characteristic of an entrepreneur.

i) Cantillion ii) JB Say

iii) Schumpter iv) Peter Drucker

c) Which of the following is not a reason to become entrepreneur.

i) to determine location ii) to work at own schedule

iii) to please one self iv) to automate income

d) Which of the following asset of an organisation does not depreciate.

i) Capital ii) Technology

iii) Personnel iv) None of the above

e) Which of the following is not the criteria for product selection.

i) Volume of potential demand

ii) The degree of import substitution

iii) Volume of aggregate existing demand in the market

iv) Degree of supply

f) Financial feasibility includes _____ .

i) Project profitability ii) requirement of raw material

iii) distribution channel iv) None of above

g) In 17^{th} century the term entrepreneur was used for _____ .

i) Artists ii) Farmers

iii) Architects & Contractors iv) Businessman

h) Which of the following is not the type of entrepreneur as per Arthur H Cole

i) Empirical ii) Fabian

iii) Rational iv) Cognitive

Q8) Answer any three of the following: **[9]**

a) Differentiate between an Intrapreneur & Entrepreneur.

b) Write a note on Leibenstein's X-efficiency theory.

c) "Profit is the reward of an entrepreneur" Comment on the statement.

d) What economic factors affect the entrepreneur environment?

e) Explain the concept of entrepreneurship.

Q9) Answer any two of the following: **[10]**

a) Entrepreneur is an economic agent. Do you agree with the statement? Explain his role in the economic development.

b) What are the steps involved in business plan process. Explain in brief.

c) Explain the survival strategies for entrepreneurs of the reasons for entrepreneurial success.