

Total No. of Questions :6]

SEAT No. :

P1459

[Total No. of Pages :4

[5125] - 301

M.Sc.

DRUG CHEMISTRY

CHD-361: Chemistry of Heterocycles and Biologically Active Compounds  
(2013 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

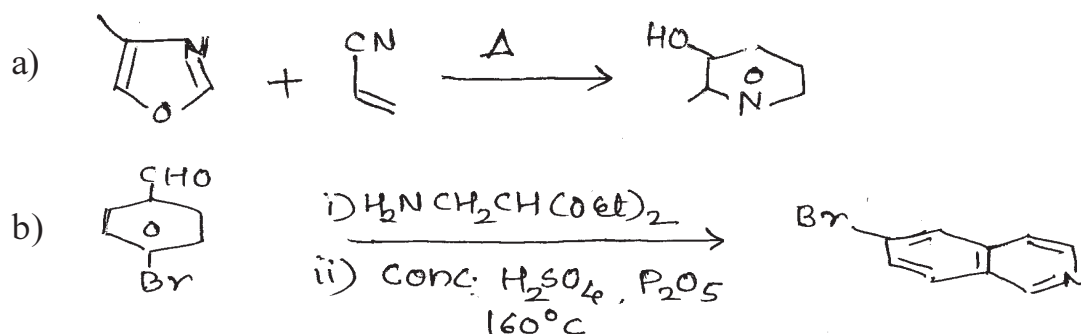
- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Answers to the two sections should be written in separate answer books.

SECTION-I

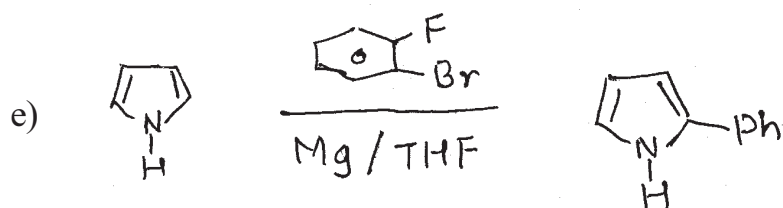
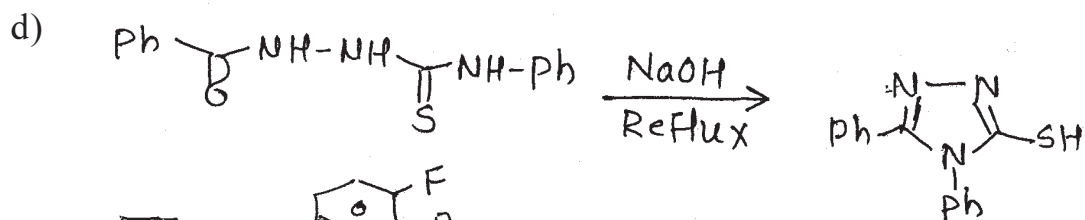
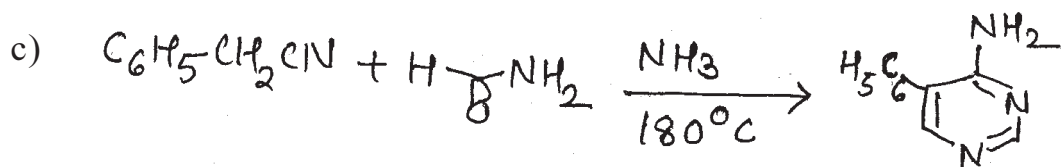
Q1) Explain any four of the following: [8]

- a) 3-chloroquinoline is resistant to nucleophilic substitution by NaOMe/MeOH, however 2-chloroquinoline reacts easily.
- b) In electrophilic substitution of benzofuran there is less selectivity than comparable reactions of indole.
- c) Treatment of thiophene with maleic anhydride gives low yield of addition product, while furan gives adduct with high yield.
- d) 4-Bromopyridine gives two isomeric products on treatment with NaNH<sub>2</sub> in Liq. NH<sub>3</sub> but with NaOMe it gives single product.
- e) Coumarin can react with electrophilic as well as nucleophilic reagents.

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



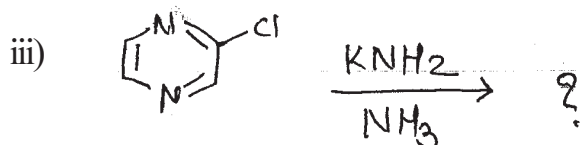
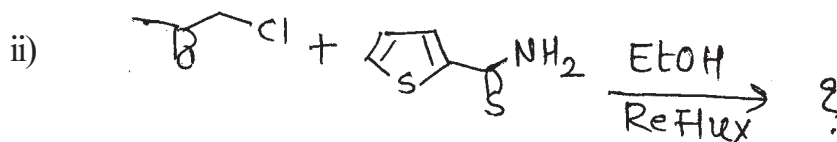
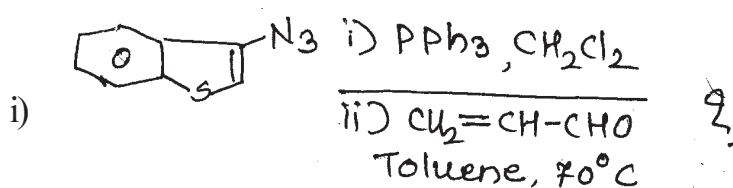
P.T.O.



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

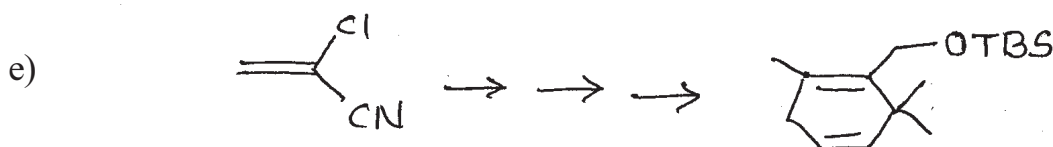
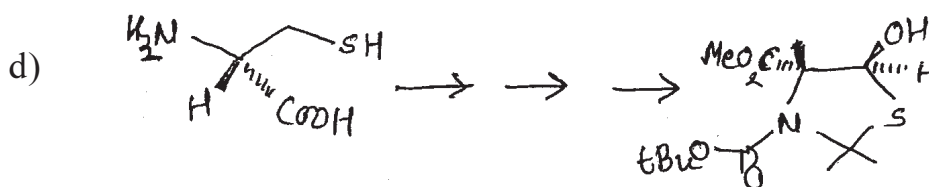
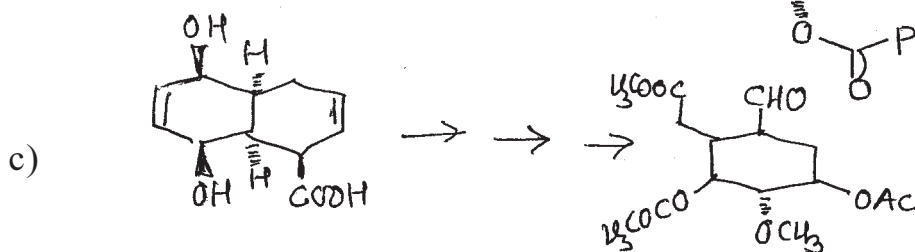
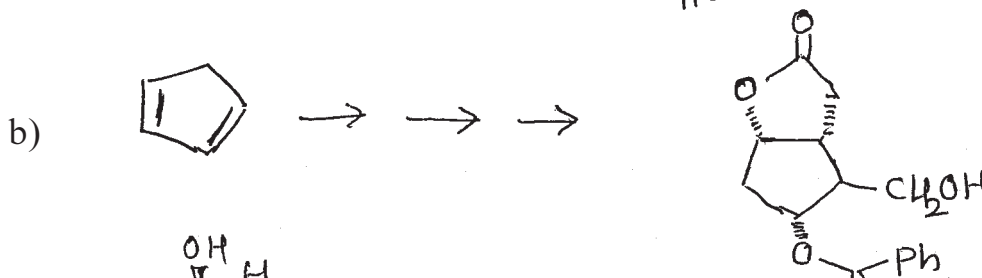
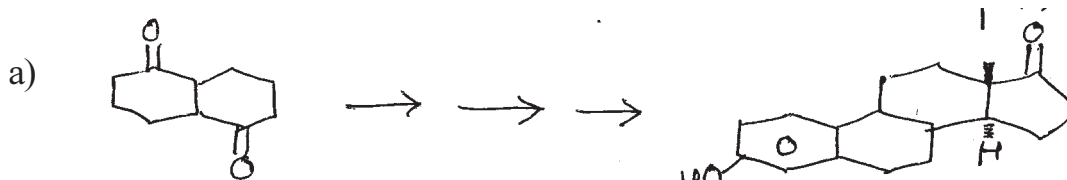
- i) Hinsberg thiophene synthesis.
- ii) Fiest Benary Furan synthesis.
- iii) Bischler -Napieralski synthesis.

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

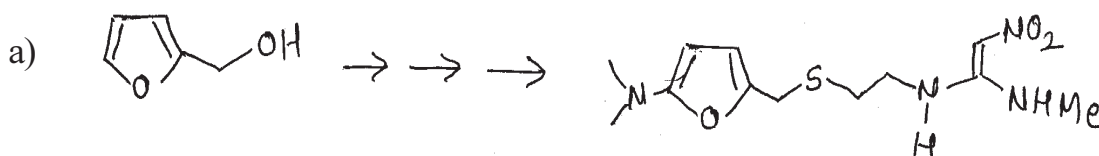


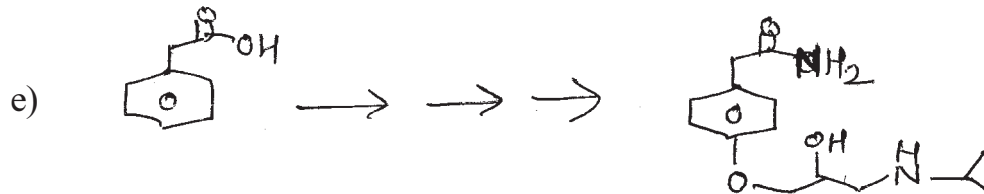
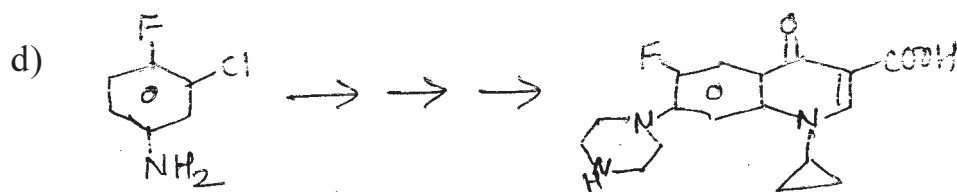
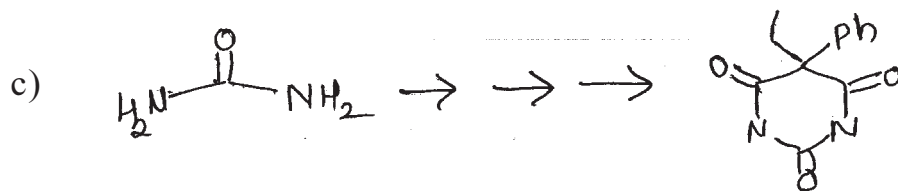
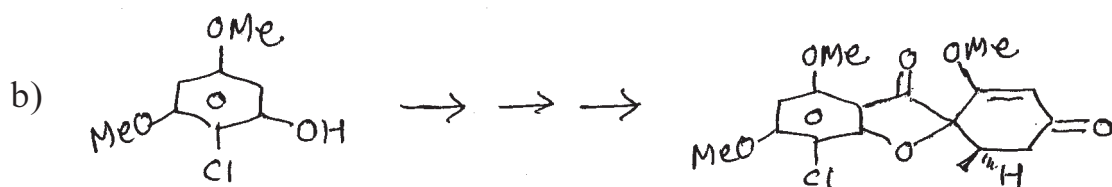
## SECTION-II

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

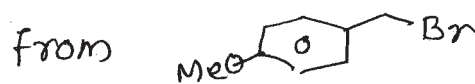
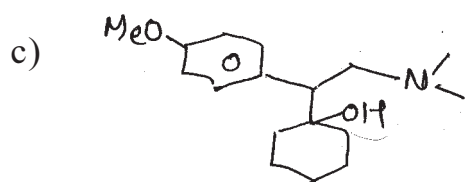
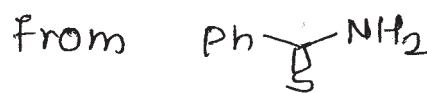
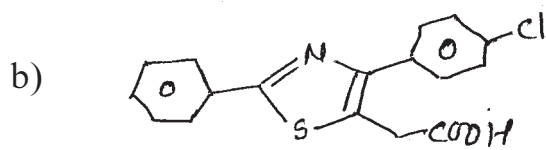
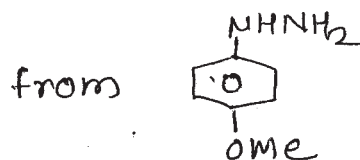
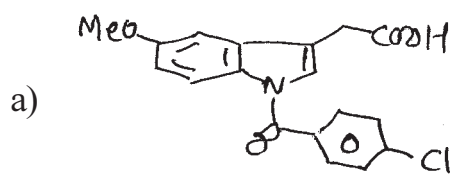


**Q5)** Discuss the steps involved in the synthesis of following drug molecules. Explain the mechanism involved (any three): [9]





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



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Total No. of Questions : 6]

SEAT No. :

P1460

[5125]-302

[Total No. of Pages : 5

M.Sc.

**DRUG CHEMISTRY**

**CHD - 362 : Advanced Analytical Methods  
(2013 Pattern) (Semester - III)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

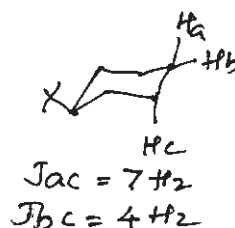
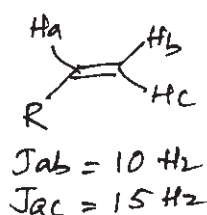
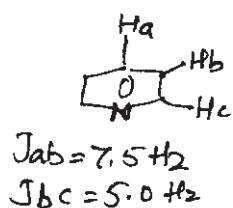
- 1) All questions are compulsory.
- 2) Answers to the two sections to be written in separate answer books.
- 3) Figures to the right indicate maximum marks.

**SECTION - I**

Q1) Answer any four of the following:

[8]

- a) Explain the coupling constants observed in the following.



- b) Indicate how the PMR spectra of Ethanol will change by

- i) Adding a drop of  $D_2O$
- ii) Adding a drop of HCl
- iii) Extrapure ethanol

- c) Why is the signal strength of  $^{13}C$  NMR weak compared with  $^1H$  NMR? How does FT NMR help in increasing the strength?

- d) Predict the structure of compounds whose PMR data is shown below

- i)  $C_3H_3Cl_5$  : 4.52 (t, 1H); 6.07 (d, 2H)
- ii)  $C_3H_5Cl_3$  : 2.2(S, 3H); 4.02 (S, 2H)

P.T.O.

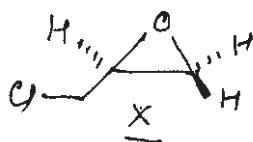
- e) How do chemical shift reagents aid in simplifying the NMR spectra - Explain.
- f) Discuss diamagnetic anisotropy with proper examples.

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

a) Arrive at a structure using following CMR data

- i) MF :  $C_7H_{16}O$  14(*q*), 16(*q*), 20(*t*), 35(*t*), 38(*t*), 40(*d*), 68(*t*)
- ii) MF :  $C_{10}H_{12}O_2$  29(*q*), 50(*t*), 55(*q*), 140(*d*), 126(*s*), 130(*d*), 159(*s*), 207(*s*)

b) The PMR & HECTOR of compound X is shown below. Assign the signals & explain

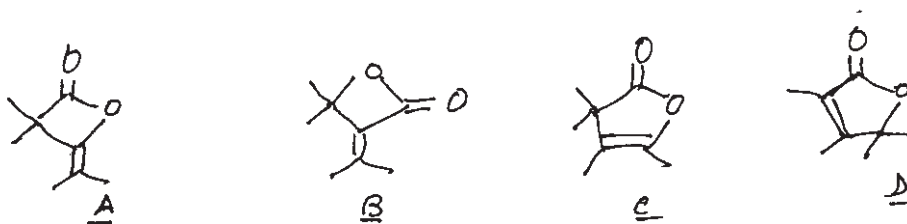


PMR : 2.7 dd, 2.5 & 4.5 Hz 1H; 2.9 t, 4.5 Hz 1H; 3.25m 1H; 3.54 dd 6 & 12 Hz 1H; 3.63 dd 12 & 5.6 Hz 1H

HETCOR : 45 :: 3.54 & 3.63; 47 :: 2.7 & 2.9; 51 :: 3.25 (:: - correlates with)

c) Identify with justification which of the four structures given below is consistent with the given CMR data having MF :  $C_8H_{12}O$

CMR: 15.2(*q*,mod), 15.4 (*q*,mod); 20(*q*,str); 54 (*s*, weak); 104 (*s*, weak); 1 & 2 (*s*, weak) & 173(*s*, weak)



d) Identify the structure of a compound with the following spectral data,

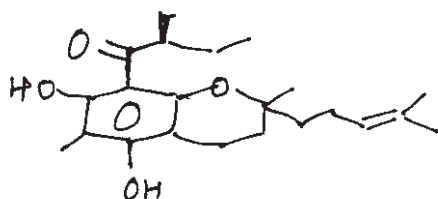
MF:  $C_7H_9N$

IR:  $2250\text{ cm}^{-1}$

PMR: 1.9 (m,2H); 2.35 (m,4H); 3.1(s,2H), 5.75(t,J=3Hz 1H)

CMR: 19(*t*), 23(*t*), 32(*t*), 34(*t*), 117(*s*), 129(*d*), 132(*s*)

**Q3)** The PMR of compound Y shows the following signals. Assign the signals to the various protons with reasoning. Use the NOE & the decoupling data for assignments. [5]



0.89(t,7.2Hz 3H); 1.16 (d, 6.7Hz 3H)  
 1.37(s, 3H); 1.42(m,1H); 1.59(s,3H);  
 1.68(s,3H); 1.71(m,1H); 1.77(m,1H);  
 1.81 (m,1H); 2.06(s,3H);  
 2.61(dd,16 & 6.3Hz 1H); 2.77(qt, 6.7 &  
 6.5 Hz 1H); 2.90(dd, 16 & 5.4Hz 1H); 3.94  
 (dd,6.3 & 5.9 Hz 1H); 5.08 (t, 6.6Hz, 1H)  
 OH protons are not shown

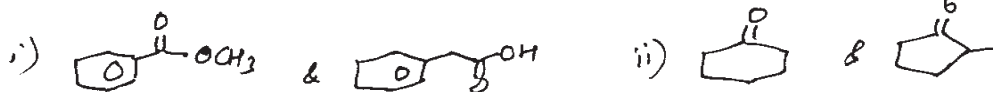
NOE: Irradiation of 1.59 gives 15% enhancement of 2.13

Decoupling: Irradiation at 2.90 changes dd at 2.61 to doublet  $J = 6.3$  Hz

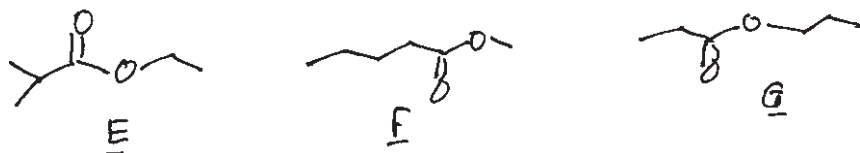
### SECTION - II

**Q4)** Answer any five of the following: [10]

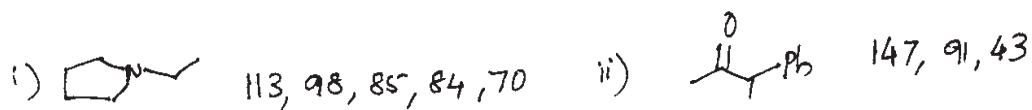
a) What differences will distinguish the following by MS



b) Assign the correct structure from those given below exhibiting  
 M.S: 116, 57, 43, 29



c) Give the genesis of the ions



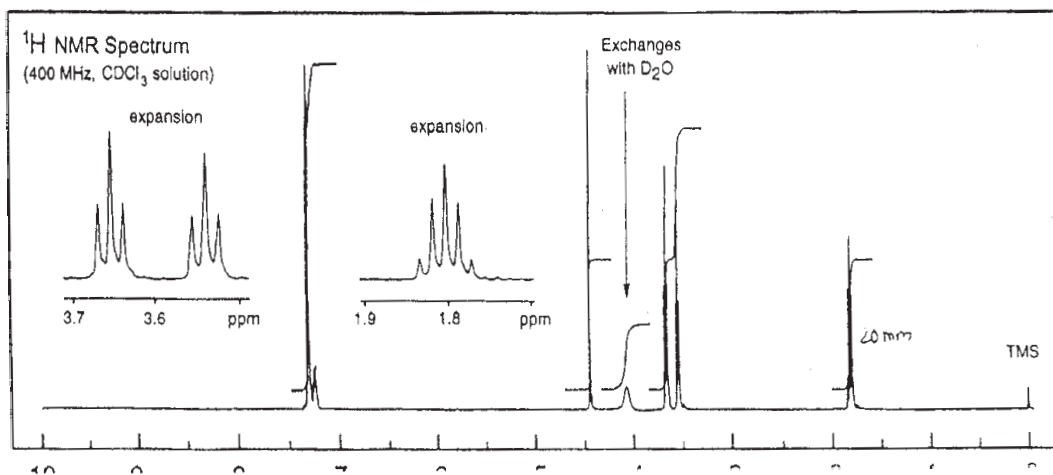
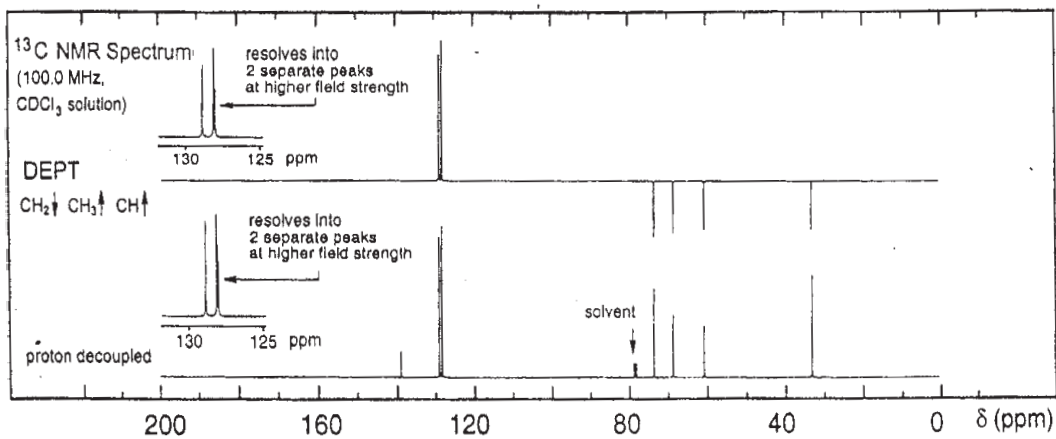
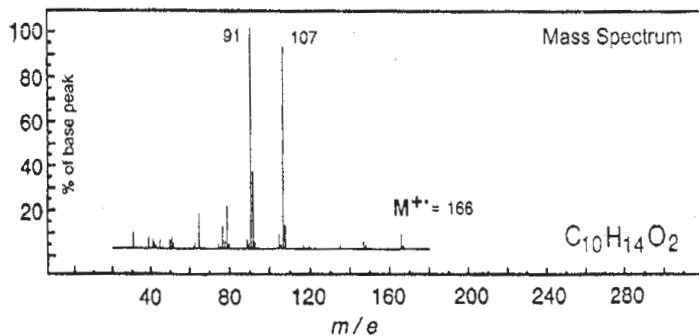
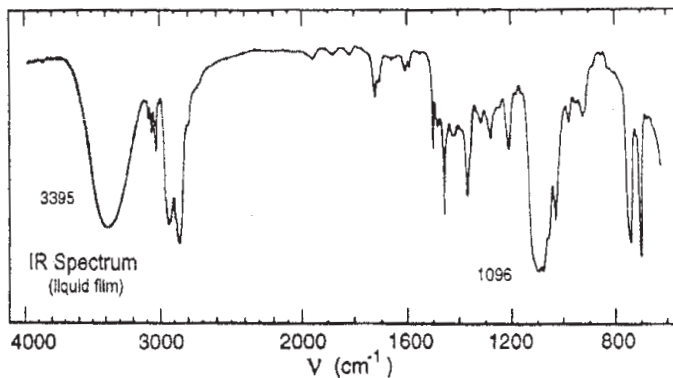
- d) What are the benefits of CIMS or MALDI over EIMS
- e) A cyclohexanone derivative  $C_{10}H_{18}O$  shows the following ion in its M.S. Deduce its structure (Exhibits a 6H d at 0.94 in its PMR)
- MS: 154(18%), 112(100); 97(25), 69(75)
- f) What will be the ratio of M, M+2 & M+4 peaks when the molecule has
- 2 chlorines
  - 1 chlorine & 1 Bromine
  - 2 Bromines
- g) Explain the working of Ionization chamber or Analyser in a mass spectrometer.

**Q5)** Discuss any two of the following in brief: **[6]**

- Factors affecting geminal coupling
- COSY
- Important fragmentation pattern in M.S.

**Q6)** You are provided with spectras of a compound on next page. Analyse the spectras & arrive at a structure consistent with the data. Justify your structure. **[9]**





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Total No. of Questions : 6]

SEAT No :

**P 1461**

**[5125]-303**

[Total No. of Pages :2

**M.Sc.**

**DRUG CHEMISTRY**

**CHD-363 :Drug Development**

**(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 to be written in separate answer books.*
- 3) *Figures to right indicate maximum marks.*

**SECTION-I**

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

- a) What is the need for effluent treatment? Explain the microbial treatment method.
- b) Discuss how microbes are isolated. Explain one of the methods in detail.
- c) Explain how antimicrobial assays are done with an illustration.
- d) Discuss the functioning of a fermenter.
- e) Explain
  - i) Industrial screening
  - ii) Industrial strain

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

- a) Describe the steps in which immune response is activated.
- b) Explain
  - i) Radio immuno assay
  - ii) Immuno electrophoresis
- c) Discuss
  - i) Adaptive immunity
  - ii) Hyper sensitivity

**Q3)** Explain any five in brief: **[5]**

- a) Ideal drug
- b) Immunoglobulin
- c) Continuous culture
- d) MIC
- e) Nitrogen fixers
- f) Ayurveda
- g) Receptor

**P.T.O.**

## SECTION-II

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

- a) Explain in brief the methods used in drug discovery. Discuss rational drug discovery.
- b) What are patents? What are the requirements of an invention to get a patent? What benefits does a patent get?
- c) Give a brief of pharmacokinetics of drug action. What are the factors that affect drug bioavailability?
- d) Discuss in brief the preclinical tests performed on an NCE before going for clinical trials. What is the difference between chronic & acute toxicity?
- e) Give a brief account of the clinical trials. Objectives of phase I,II,III,IV of the observations in phase II.

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

- a) Discuss how the biological activity of a new drug is evaluated. Explain the steps involved.
- b) Explain the strategies adopted in the process development department for getting a better route of drug synthesis.
- c) Discuss the benefits of injectables over lotions over the oral drug dosage forms.
- d) Give a brief overview of sources of drugs.

**Q6)** Explain any four of the following : **[4]**

- a) First pass effect
- b) Receptor
- c) FDA
- d) Drug target
- e) Role of oxidoreductases in drug metabolism



Total No. of Questions : 6]

SEAT No. :

P1462

[5125]-304

[Total No. of Pages : 4

M.Sc.

**DRUG CHEMISTRY**

**CHD - 364 : Stereochemistry, Asymmetric synthesis & Pericyclic Reactions**

**(2013 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 50*

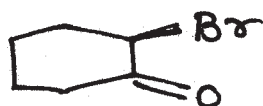
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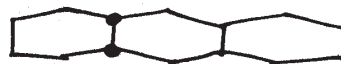
**SECTION - I**

**Q1) Attempt any Four of the following: [8]**

- a) Trans 4 - t butyl cyclohexanol is strongly adsorbed on alumina than its Cisomer.
- b) Give the stable conformation for following compounds. Comment on their  $\nu_{C=O}$ (stretch) in IR & absorption in UV.



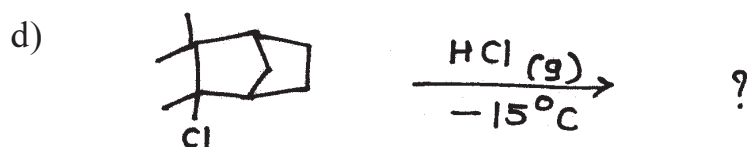
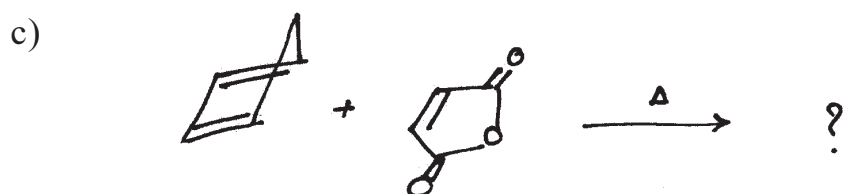
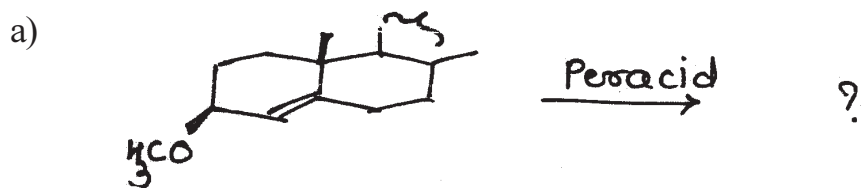
- c) Which of the conformation from the following is stable? Why? Give the nomenclature.



- d) One of the isomer of 2-hydrindone on reduction gives two meso alcohols. While other gives only one isomer. Explain.
- e) Cis decalin is less stable than trans decalin. Explain with stereostructures.

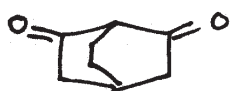
*P.T.O.*

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

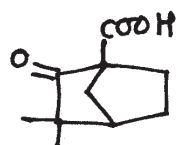


**Q3) a)** Discuss any Three of the following: [6]

- 2 Alkyl Ketone effect.
- Bicyclo [2,2,2] octane 2,6 diene (A) does not show acidic property, while camphenoic acid (B) does not readily undergo decarboxylation.



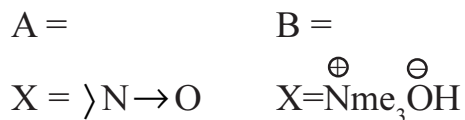
[ A ]



[ B ]

- Steric Assistance in solvolysis to tosylates of cyclohexanols.
- Optical Activity of cis and trans isomer of 1,2 dimethyl cyclohexane.

- b) Compound A & B on pyrolysis yield the cis/trans olefin depending upon the ring size. Explain the formation of product on the basis of stereochemistry. [3]

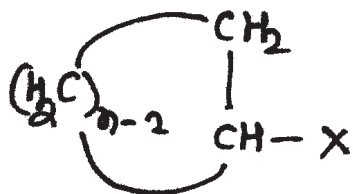


n=7    A&B gives cis olefin

n=9    A&B gives trans olefin

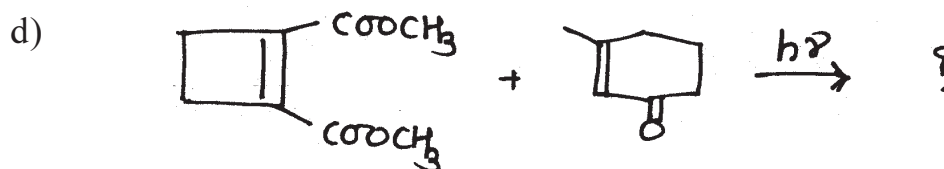
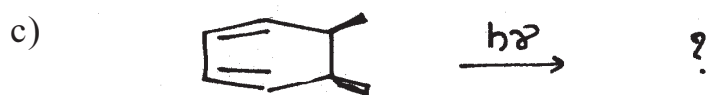
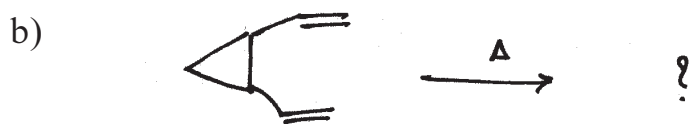
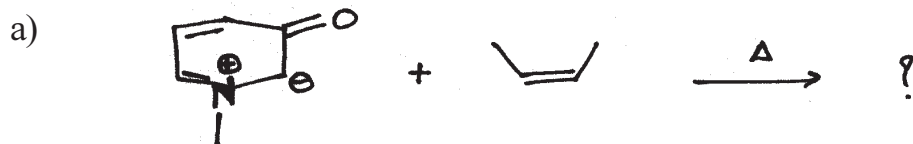
n=8    A gives cis olefin

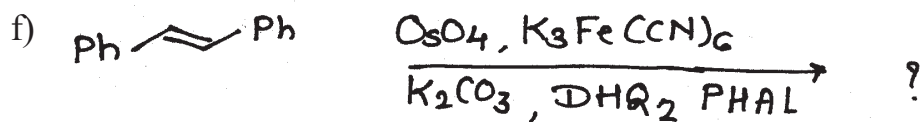
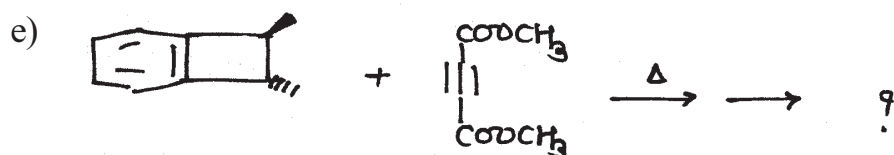
B gives cis + trans olefin



### SECTION - II

- Q4) Predict the product/s with correct stereochemistry and suitable mechanism (any Five) [10]

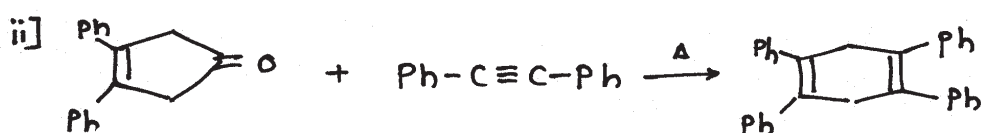
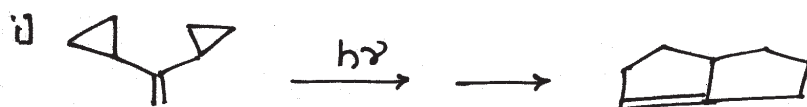




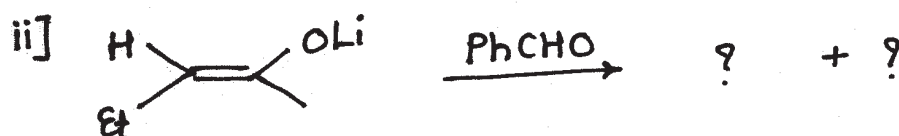
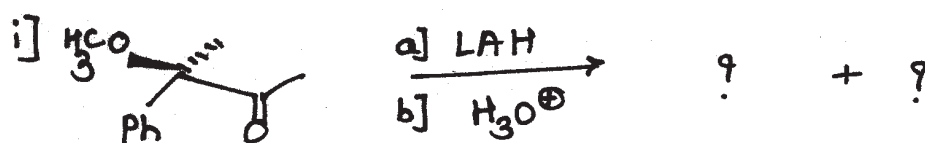
Q5) Attempt any Two of the following:

[10]

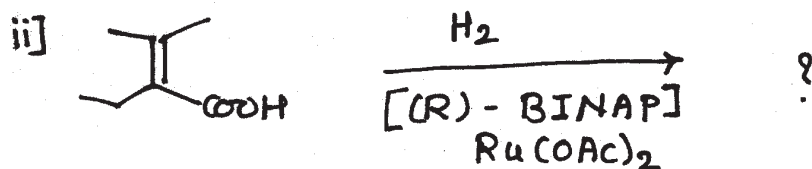
a) Suggest the proper mechanism for the following:



b) Predict the product for following reaction



c) i) Explain Felkin-anh model with example.



Q6) Construct correlation diagram for 2+2 cycloaddition & check whether it is allowed thermally or photochemically. [5]

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Total No. of Questions :6]

SEAT No. :

P1463

[Total No. of Pages :5

[5125] - 401

M.Sc. -II

DRUG CHEMISTRY

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

Time : 3 Hours]

[Max. Marks :50

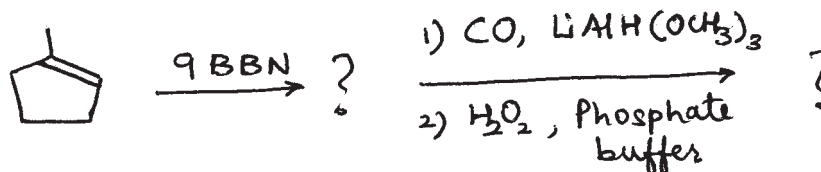
Instructions to the candidates:

- 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.

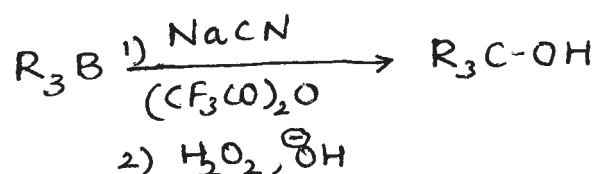
SECTION-I

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

- i) Explain that organoalanes reacts with epoxides to give Markownikov's product while organoaluminates gives anti markownikov's product.
- ii) Stable phosphorus ylides gives E olefins. Explain.
- iii) Predict the product



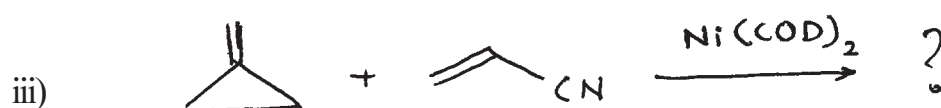
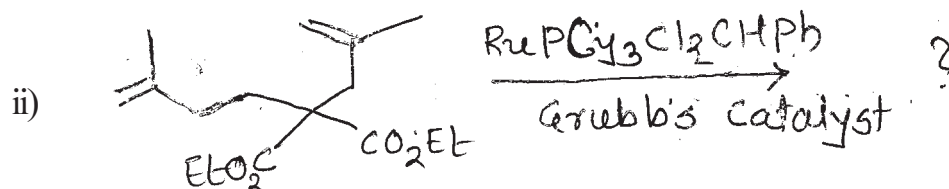
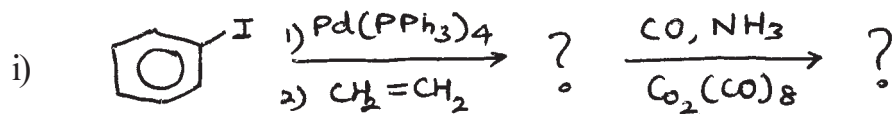
- iv) Suggest the mechanism for the following reaction



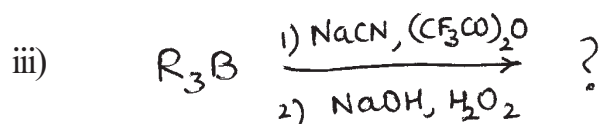
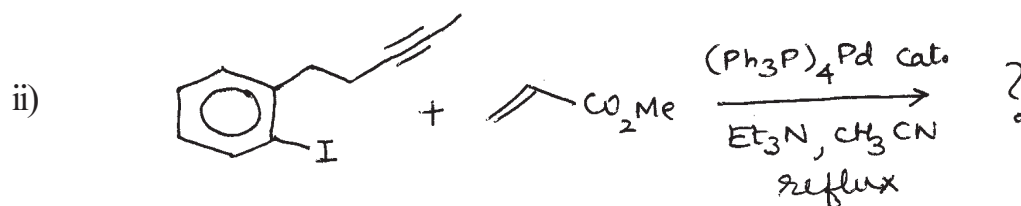
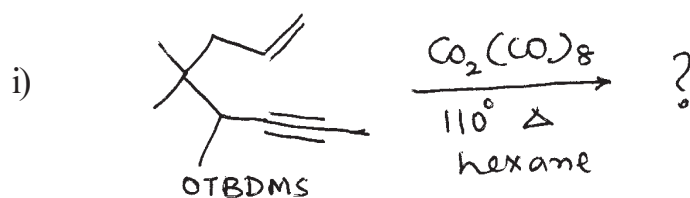
P.T.O.



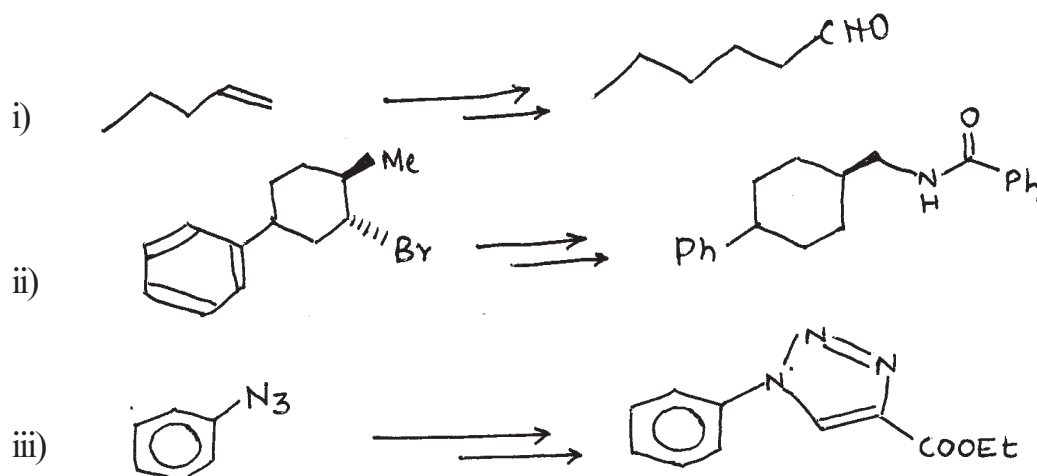
b) Predict the product for any two of the following reactions. [4]



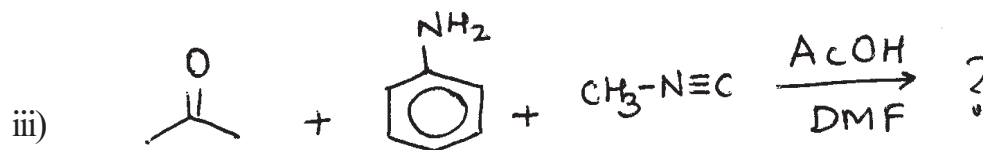
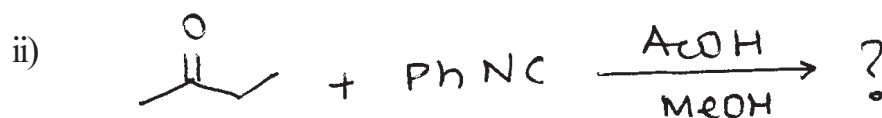
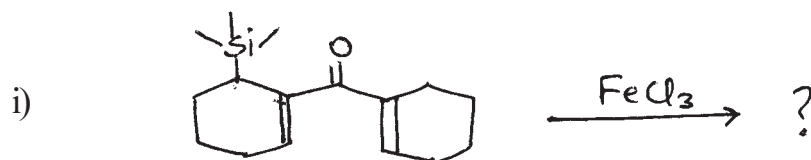
Q2) a) Predict the product and suggest a suitable mechanism for its formation (any two): [4]



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



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

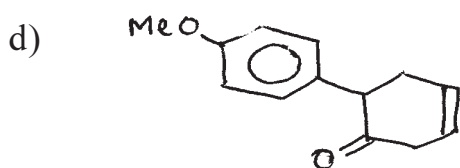
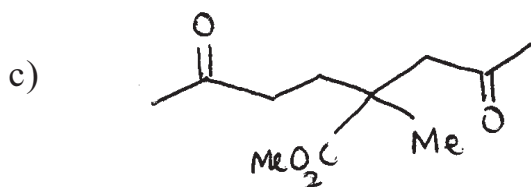
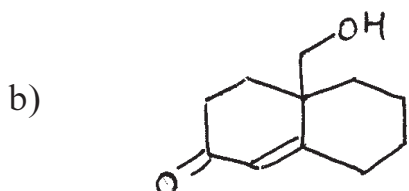
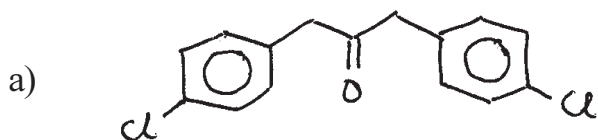


b) Write short note on any two: [3]

- Bergman cyclization
- Suzuki coupling
- Criterion for click reaction.

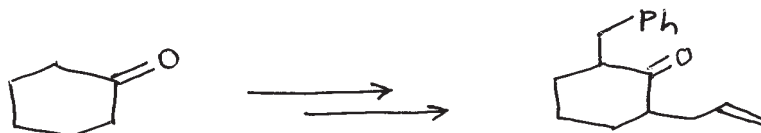
## SECTION-II

**Q4)** Using retrosynthetic analysis, suggest the suitable method to synthesize any three of the following: [9]



**Q5) a)** Answer any two of the following: [4]

i) Carry out the transformation by examine approach.



ii) Synthesize the following using umpolung method.



iii) Complete the following transformation.



b) Answer any two of the following: [4]

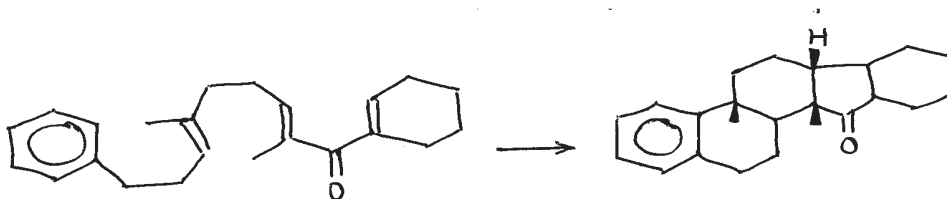
- i) Discuss the principles of Green chemistry.
- ii) 1, 2 - dicarbonyl compounds can be synthesized by umpolung method. Explain.
- iii) 1° alcohols can be selectively protected in presence of 2° & 3° alcohols. Explain.

Q6) Answer any four of the following: [8]

a) Complete the following conversion.



b) Explain the steps involved in the following reaction.



- c) Explain the role of ionic liquids in organic synthesis.
- d) Give one reaction with a suitable reagent for each synthon given below.



e) Explain Urethane protections are useful for protecting amino group during peptide synthesis.

EEE

Total No. of Questions : 6]

SEAT No. :

P1464

[5125]-402

[Total No. of Pages : 3

M.Sc.

**DRUG CHEMISTRY**

**CHD - 462 : Advanced Medicinal Chemistry  
(2013 Pattern) (Semester - IV)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

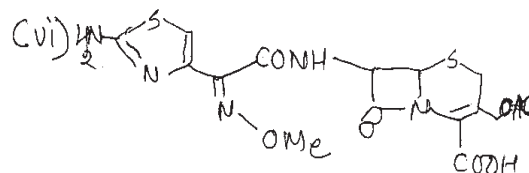
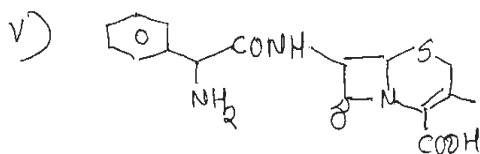
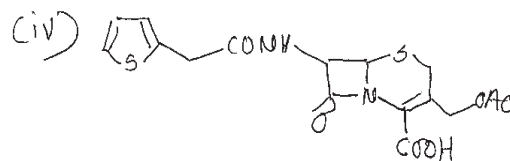
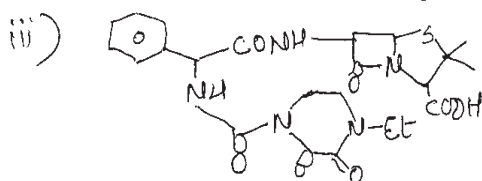
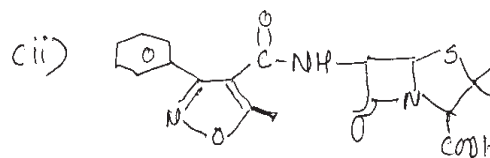
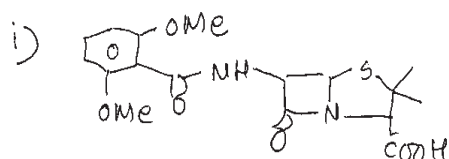
- 1) All questions are compulsory.
- 2) Answers to the two sections should be written in separate answer books.
- 3) Figures to the right indicate full marks.

**SECTION - I**

Q1) Answer any three of the following:

[9]

- a) The following are semisynthetic penicillins and cephalosporins, indicate in each case what benefits each one of the following has over the naturally occurring penicillin G or cephalosporin C



- b) How do aminoglycoside antibiotics differ from tetracyclines? Discuss in brief their mode of action, advantages and shortcomings.
- c) Discuss the development of quinolone antibiotics why they have achieved the distinction of most commonly used antibiotics.

P.T.O.

- d) Discuss protein synthesis inhibitors as drugs and their use in Tuberculosis, Typhoid, URTI, Leprosy and Cancer.
- e) Explain the Following terms
  - i) Prodrugs
  - ii) Drug resistance
  - iii) Drug synergism

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

- a) How do alkylating agents exhibit their effect? Discuss the development of aromatic mustards starting from the discovery of mustard gas? What is the speciality of Nitrosoureas.
- b) What is the role of cholinergic and adrenergic systems? Explain the steps involved in neurotransmitter release and the fate of neurotransmitters in the synaptic cleft? How does this information help to design drug molecules?
- c) Give a short commentary on any two of the following:
  - i) Viral Infections
  - ii) Sedatives
  - iii) Fungal Infections

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

- a) Analgesics.
- b) Antimetabolites.
- c) Barbiturates and Benzodiazepines as anticonvulsants.
- d) Symptoms and treatment of malaria.

### **SECTION - II**

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

- a) What are common gastrointestinal disorders? Explain how antiulcer agents and antidiarrheal agents exhibit their effects.
- b) Explain in brief the mechanism involved in inflammation. How do the common anti-inflammatory drugs exhibit their action.

- c) Give an overview of diabetes. Discuss any two classes of drugs used for the management of NIDDM.
- d) Discuss in brief the role of natural products as drugs in disease management and new drug discovery.

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

- a) Explain the functions of the following hormones; how is their secretion regulated? What happens when they are oversecreted and give the measures to rectify these disorders
  - i) Thyroxin
  - ii) Calcitonin
  - iii) Aldosterone
- b) Give a brief account of the following CVS disorders (any three)
  - i) Arrhythmia
  - ii) Angina
  - iii) Hypertension
  - iv) Myocardial Infarction
- c) Explain the use and mode of action of following classes of drugs (any three).
  - i)  $\beta$  - Blockers
  - ii) Organic nitrates
  - iii) Corticosteroids
  - iv)  $Ca^{2+}$  channel blockers

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

- a) Oxytetracycline.
- b) Thienamycin.
- c) Omeperazole.
- d) Metronidazole.
- e) Retonovir.

**x      x      x**

Total No. of Questions : 6]

SEAT No :

**P 1465**

**[5125]-403**

[Total No. of Pages :3

**M.Sc. (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) Answer 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 terms:
  - i) Pharmacogenomics
  - ii) Hybridoma
  - iii) Vector
- b) Give advantages of monoclonal antibodies over polyclonal antibodies.
- c) Explain use of antisense therapeutic agents.
- d) Describe steps in development of transgenic plants.

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

- a) Draw a schematic diagram of membrane & explain the various it performs. Why are membrane bound targets attractive for drug designing?
- b) What are the strategies to create prodrugs? Explain with proper examples how they improve the various components of pharmacokinetics of drug action (ADMET).
- c) Discuss in brief how combinatorial synthesis has helped in designing large no of compounds. Explain the Split Mix method used & the tagging used to identify an active molecule.
- d) Explain in brief how the design of novel medicines was done when the target structure & its mechanism of action was properly understood (eg. Malaria, Cancer, Inflammation etc.).

**P.T.O.**



- Q3)** Explain the following in brief: [4]
- 7 TM receptor.
  - Inductive fit theory.
  - Bipartate drugs.
  - High through put screening.

### SECTION-II

- Q4)** Answer any three of the following: [12]
- Discuss in brief the development of Hansch analysis & the Hansch equation. What is the significance of 's' & 'r'.
  - How are molecules designed when the structure of the target is not known. Discuss with examples.
  - Explain any two in brief.
    - Molecular mechanics force fields
    - Quantum mechanics
    - Conformational search
  - Discuss in brief how any two the following QSAR methods are performed
    - Batchwise Cluster analysis.
    - Free Wilson analysis.
    - Topliss manual method.

- Q5)** Answer any three of the following: [9]
- Explain in brief - 3D QSAR is better than QSAR, which is still better than routine SAR studies. Justify.
  - How will you approach to design novel medicines based on the fact that "Dihydrofolate reductase" is an very important target for Cancer & Malaria lots of drugs are known to be DHFR Inhibitors. The crystal structure of DHFR is known very well. How will you use computer aided drug design to get novel inhibitors of this enzyme justify your approach.
  - Discuss in brief.
    - Virtual screening
    - Monte Carlo Search
  - Discuss how the following receptors function
    - GPCR
    - Ion gated channels
    - Ligand gated channels

**Q6)** Explain the following terms (any four):

**[4]**

- a) t-test
- b) 3D pharmacophore
- c) COMFA
- d) Craigs plot
- e) log P
- f) Correlation analysis

→ → →

Total No. of Questions : 9]

SEAT No. :

**P1466**

**[5125]-404**

[Total No. of Pages : 4

**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 section 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 and mode. Compute the same for data given below:

Class	0-10	10-20	20-30	30-40	40-50
-------	------	-------	-------	-------	-------

Frequency	5	8	13	6	3
-----------	---	---	----	---	---

- b) What is correlation? Find the correlation coefficient for the following data:

x	10	16	20	25	30	36
---	----	----	----	----	----	----

y	8	4	6	4	3	2
---	---	---	---	---	---	---

**P.T.O.**

- c) Explain the term variance. Calculate variance for the following frequency distribution.

No. of seeds

Germinated            0    1    2    3    3    2

No. of Seeds            2    4    6    5    4    5

- d) Explain the following:
- Inclusive method of classification
  - Class width
  - Less than cumulative frequency
  - open end class

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

- Explain in brief 'proteomics' and any one technique used in proteomics.
- What is chemoinformatics? Explain SMILE notations.
- Give a brief account of genomics and its applications.

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

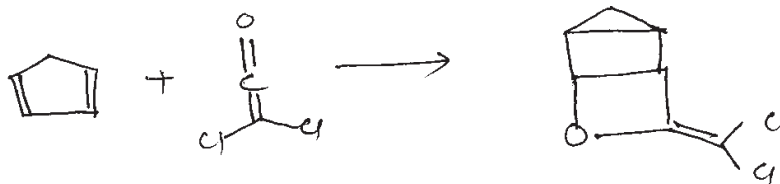
- Structure based drug discovery.
- Biological databases.
- 2-D gel electrophoresis.

### SECTION - II

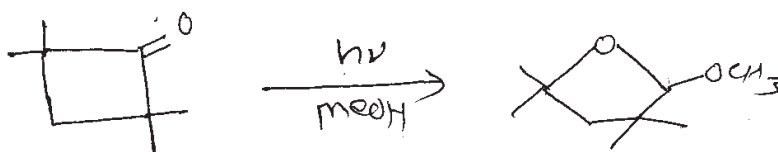
#### **CHD - 464B : Current Trends in Org. Chemistry, Supramolecular Green Chemistry, Photochemistry & Free Radical Reactions**

**Q4)** a) Suggest the mechanism & explain the following (Any one): **[4]**

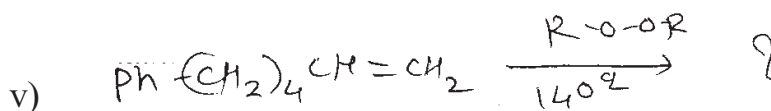
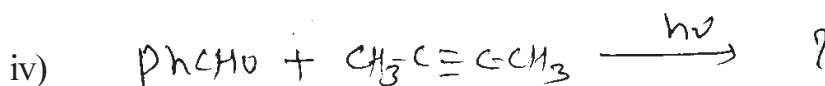
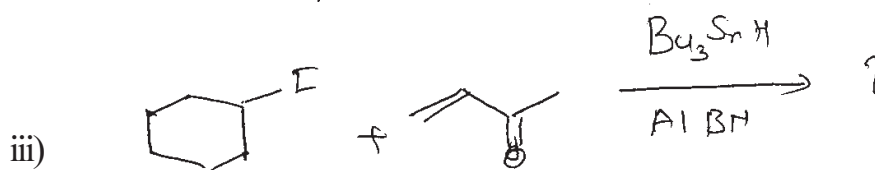
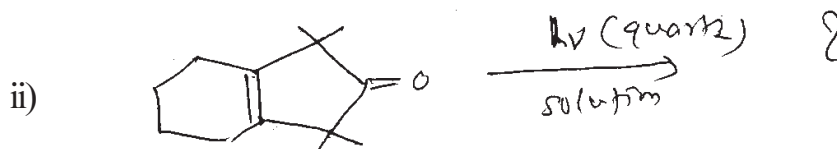
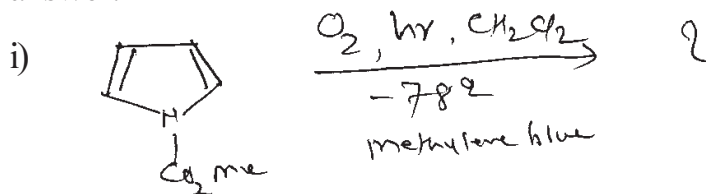
i)



ii)



b) Predict the product/s for any Four of the following and justify your answer: [8]



Q5) Solve any five of the following:

[10]

a) Write short note on :

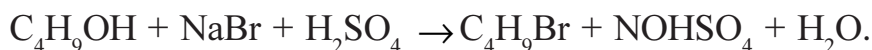
Barton Reaction

OR

Photoerolization.

b) Explain the stability of free radicals with examples.

c) Calculate atom economy of following reaction.



d) What are bio-catalyst? Give examples of organic reactions involving the use of bio-catalyst.

e) Write short note on Ultrasound assisted reactions.

f) Explain with example the Free radical nucleophilic substitution reactions.

- Q6)** Write short note on any two of the following: **[5]**
- a) Principles of Molecular association.
  - b) Molecular receptors and design principles.
  - c) Supramolecular reoetining & Catalysis.

**SECTION - III**

**CHD - 464C : Entrepreneurship Development and project  
Management**

- Q7)** Write short notes on any three of the following: **[6]**
- a) Entrepreneurship.
  - b) Intrapreneur.
  - c) Entrepreneurship Development Process.
  - d) Types of Entrepreneur.
  - e) Innovation theory of entrepreneurship by Schumpeter.

- Q8)** Answer any three of the following: **[9]**
- a) People with 'High Achievement Motivation' are prone to become an entrepreneur. Explain with the help of McClelland's theory.
  - b) Explain in detail the evolution of the term 'Entrepreneur'.
  - c) 'Entrepreneurship does not emerge spontaneously'. Discuss in brief.
  - d) Discuss the common errors made in writing a business plan that make it Failure.
  - e) Explain the problems faced by women entrepreneurs.

- Q9)** Attempt any two of the following: **[10]**
- a) How external Factors affect entrepreneurial growth?
  - b) List out the various stages involved in formulation of a business plan.
  - c) Discuss about entrepreneurial search and identification.

