Total No. of Questions : 6]

SEAT No. :

PD-3246

[Total No. of Pages : 6

[6478]-31

M.Sc. (Part - II)

DRUG CHEMISTRY

CHD-360 : Advanced Analytical Methods

(2019 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

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

SECTION - I

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

i) Find a molecular formula of amide having molecular weight 131.

ii) How will you differenciate the following using 'H NMR spectroscopy?

iii) The compound C_4H_2 gives two peaks in ^{13}C NMR however DEPT-135 gives only one peak at 90ppm. Suggested the structure.

iv) How will you distinguish between 1º, 2° & 3° alcohol using 'H NMR.

v) COSY could be used to simplify & interpretation of complex spectra.

b) 'H NMR spectrum of an organic compound recorded on a 500 MHz spectrometer showed a quartet with line positions at 1759, 1753, 1747, 1741 Hz. Find chemical shift(δ) and coupling constant (J). **[3]**

P.T.O.

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

a) M.F. : $C_{10}H_{13}O_2N$

IR : 1150, 1680, 3300cm^{-1}

'H NMR : δ 1.3(t, 7Hz, 3H) 2.05(s, 3H) 3.9(q, 7Hz, 2H) 6.6(d, 7.5Hz, 2H) 7.1(d, 7.5Hz 2H)

^{13}C NMR: 18(q), 22(q), 72(t) 119(d, str.) 121(d, str.) 146(s), 156(s) 165(s).

b) A compound C_4H_7Cl exhibits the following signals in its 'H NMR spectrum.

1.6(d, 6.5Hz, 3H), 4.5(dq, 6.5 & 7Hz, 1H); 5.08(dt, 1.1 & 10Hz, 1H); 5.24(dt, 1.1 & 17Hz, 1H); 5.96 (ddd, 7, 10 & 17Hz, 1H)

i) Irradiation signal at δ 1.6 makes δ 4.5 doublet with 7Hz.

ii) Irradiation of δ 4.5 converts δ 5.96 into ddJ = 10R 17Hz.

Arrive the structure with the help of above data.

c) M.F. $C_8H_{11}N$

IR : 3354, 1596, 1020, 761, 703

PMR : 7.2(s, 5H); 3.87(q, 6.6Hz, 1H); 1.83(bs, 2H); 1.2(d, 6.6Hz, 3H).

d) M.F. $C_7H_{14}O_2$

Mass : 130, 115, 100, 73, 43

CMR : 208(s), 75(s), 54(t), 50(s), 33(q), 25(q, strong)

PMR : 1.3(s, 6H), 2.2(s, 3H), 2.5(s, 2H) 3.2(s, 3H)

e) The three isomeric compounds with molecular formula C_3H_6O have the following ^{13}C NMR pattern. Assign structure to each of these isomers and justify your answer.

i) 58, 29, 28, 27

ii) 58, 43

iii) 58, 57, 29, 28

Q3) a) Write short notes on any three of the following : **[9]**

i) Off resonance decoupling spectroscopy.

ii) Application of cosy.

iii) Factor affecting vicinal coupling constant.

iv) Chemical ionization in Mass

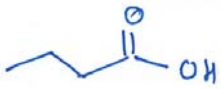
b) A neutral compound with molecular formula $C_6H_{10}O_2$ shows the following signals in ^{13}C NMR. Suggest probable structure for the compound. Justify **[3]**

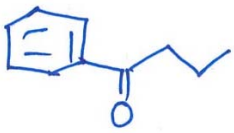
^{13}C NMR : 6.3(q), 15.3(q) 71.1(t) 119.9(s) 168.4(d) 191.8(d).

SECTION - II

Q4) a) Write the genesis of the following ions (any four) : **[8]**

i) 1Bromo hexane m/z = 166, 164, 136, 137, 85, 84, 43, 28

ii)  m/z = 88, 60, 45, 43, 71

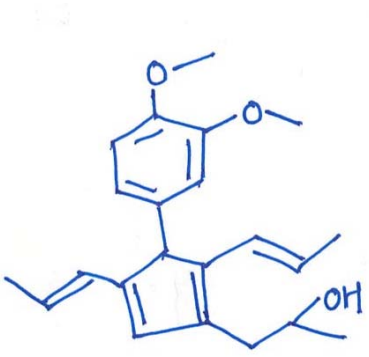
iii)  m/z = 148, 120, 106, 105, 77, 51

iv)  m/z = 82, 67, 54

v)  m/z = 100, 99, 82, 57

b) Explain the isotopic peaks in mass spectrometry. **[3]**

Q5) a) Compound X shows following. Assign the signals to aromatic protons using decoupling experiments given below. Justify your answer. **[7]**

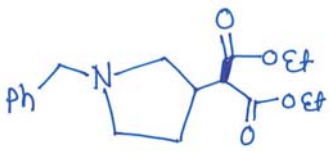


1.23(d, 3H, J = 6Hz)
1.49-1.62(d, 6H, J = 7.1Hz)
2.42(dd, 1H, J = 13.4Hz, 6Hz)
2.48(dd, 1H, J = 13.4Hz, 1.5Hz)
3.80(s, 6H)
3.87(tq, 1H, J = 6, 1.5Hz)
4.04(s, 1H)
5.90(dq, 2H, J = 15.30 & 7.1Hz)
6.10(d, 2H, J = 15.30Hz)
6.30(s, 1H)
6.67(dd, 1H, J = 8 & 2Hz)
6.70(d, 1H J = 8Hz)
6.96(d, 1H J = 2Hz)

Decoupling Experiments

	Irradiation at		Change at
1)	δ 3.87	i)	1.23 (d) → s
		ii)	2.42 (dd) → d(13.4Hz)
		iii)	2.48 (dd) → d(13.4Hz)
2)	δ 5.90	i)	1.49 (d) → s
		ii)	6.10 (d) → s

b) Assign following CMR signals to the various carbon of compound Y and Justify your answer. **[5]**



14(q, str.), 30.7(t), 38.3(d),

49.2(t), 54.4(t), 55.2(d),

60.7(t), 61.2(t, str.), 167(s, str.)

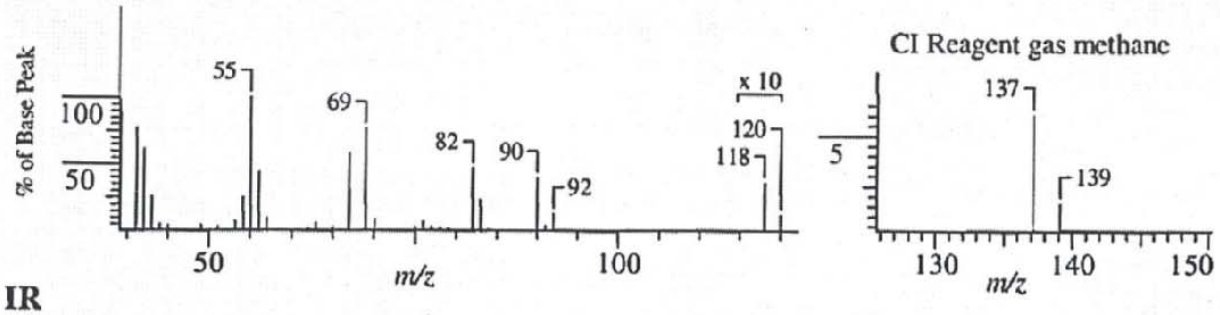
Note : Aromatic carbon signal not given.

Q6) A compound exhibits the following spectral data properties shown on attached sheets suggest the structure for the compounds and explain the spectral data. **[12]**

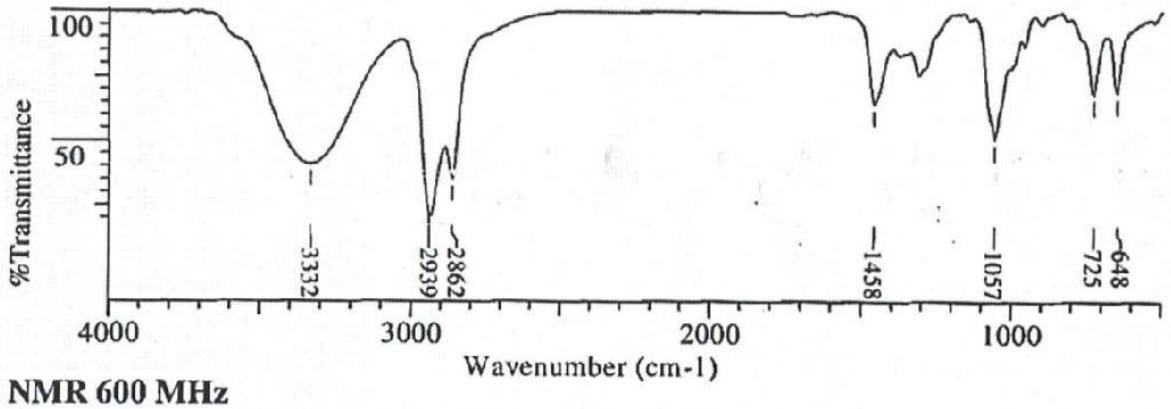
M.F. $C_6H_{13}ClO$

Mol. wt. 136

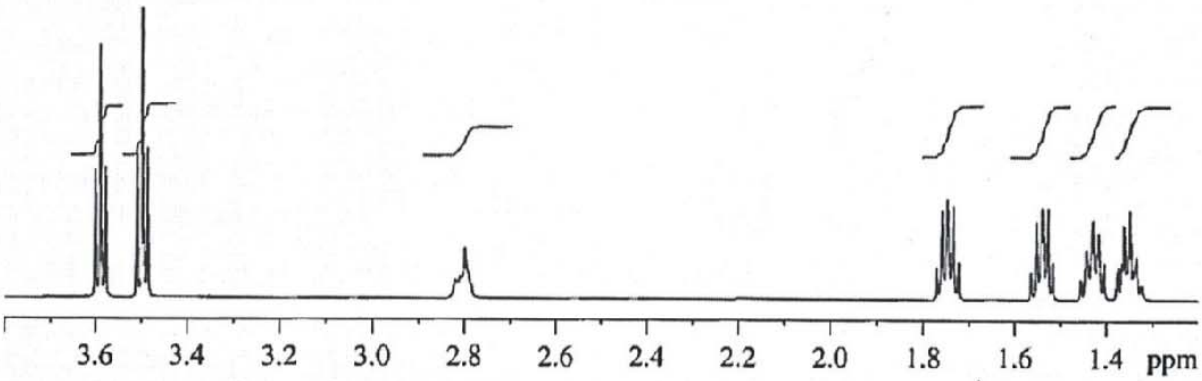
MASS



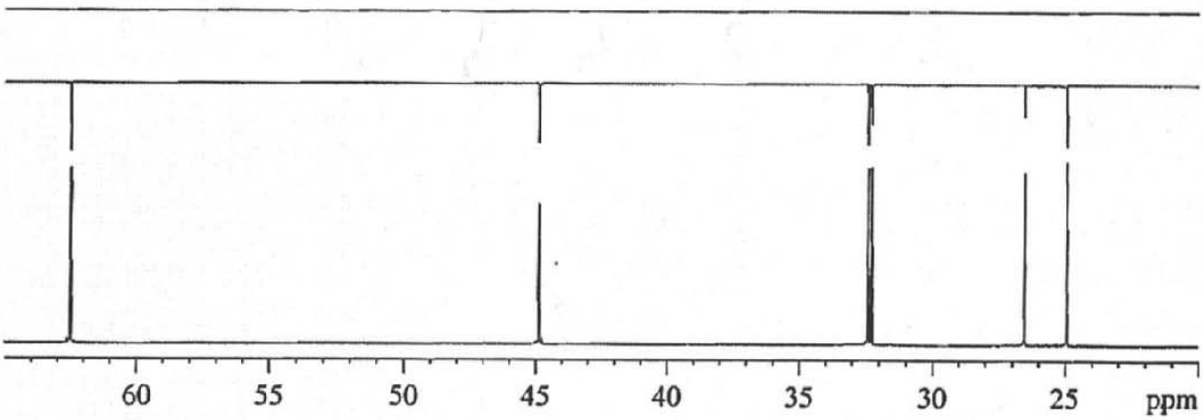
IR

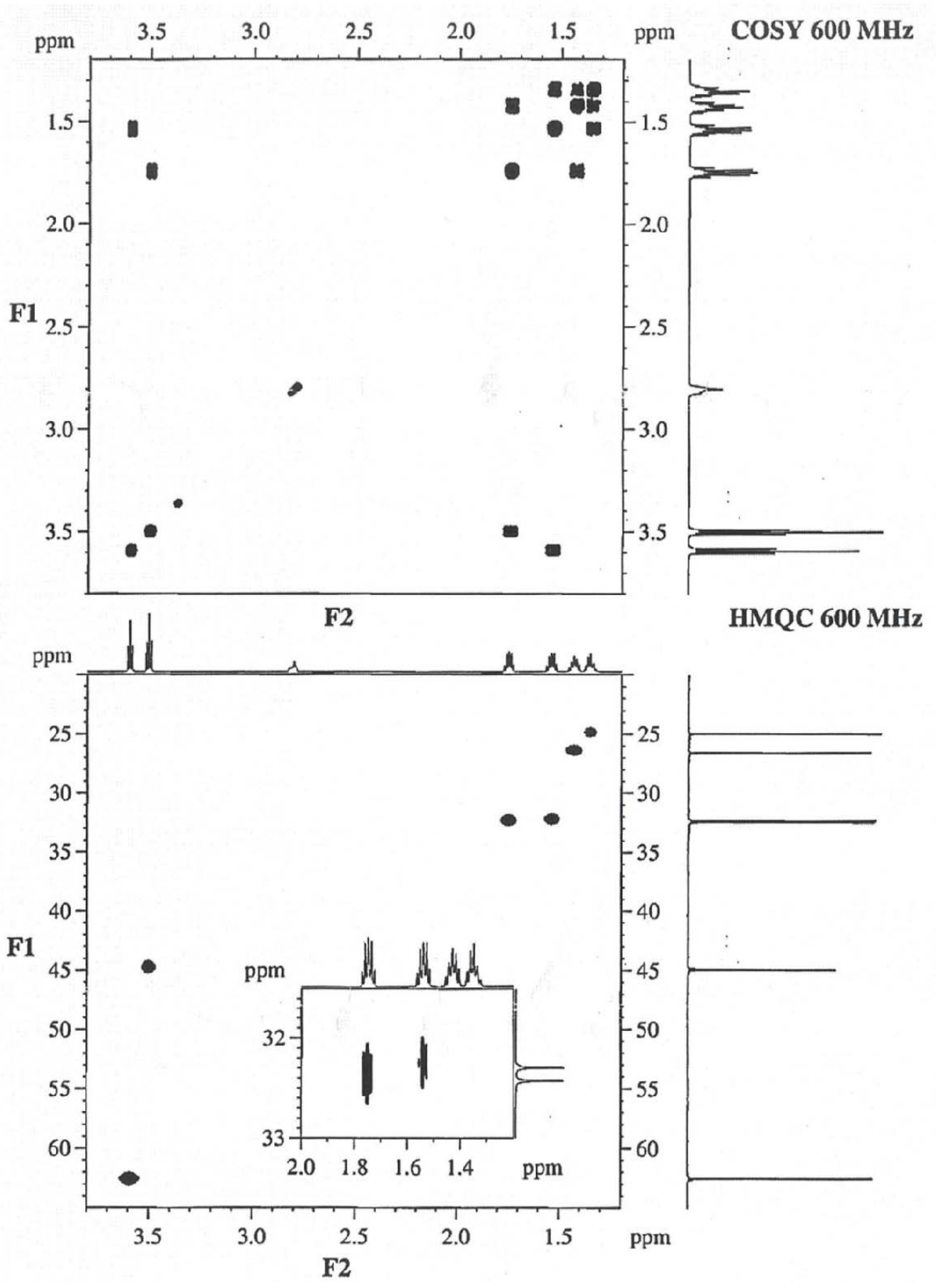


^{1}H NMR 600 MHz



^{13}C/DEPT NMR 150.9 MHz




COSY 600 MHz
ppm
3.5
3.0
2.5
2.0
1.5
F1
F2
HMQC 600 MHz
25
30
35
40
45
50
55
60
32
33
1.8
1.6
1.4

Total No. of Questions : 6]

SEAT No. : ____

PD-3247

[Total No. of Pages : 2

[6478]-32
M.Sc. (Part - II)
DRUG CHEMISTRY
CCTP - 8 - CHD-361 : Drug Discovery and Development
(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate maximum marks***
4) ***Draw the neat Label diagram wherever necessary.***

Section - I

Q1) a) Answer the following : **[8]**

i) Define

a) Efficacy b) Potency

ii) Write in brief characteristics of an ideal drug

iii) Define

a) Receptor b) Agonist

iv) Explain the toxins and venoms acts as a source of drug

b) Make a overview on History of Drugs with examples. **[3]**

Q2) a) Answer any one of the following : **[6]**

i) Explain in brief ADMEof drug action. Discuss the different factors affecting on each of the component.

ii) What is Lead? Discuss the different strategies involved in Lead discovery.

b) How can we screened Lead compounds from the followings with the examples? (any two) **[6]**

i) Serendipity ii) Medical folklore

iii) Existing drugs

P.T.O.

Q3) A) Answer any one of the following : **[6]**

a) Discuss how an active ingredients are isolated from the following with examples.

i) Microbial ii) Plant

iii) Animal

b) Explain the following system of medicines.

i) Unani ii) Siddha

B) Write a short note on (any two) : **[6]**

a) Sterile drug dosage form

b) Protein as a drug target

c) Nucleic acid as a drug target

Section - II

Q4) a) Define the following : **[8]**

i) Lead compound ii) Drug

iii) Pharmacophore iv) Pharmacokinetics

b) Make a comment on loxicological evaluation of a new drug. **[3]**

Q5) a) Answer any one of the following. **[6]**

i) What is patent? Give its basic and formal requirements of patents.

ii) Explain the ADME of drug action, how does this affect the bioavailability of a drug?

b) Discuss the following. (any two). **[6]**

i) Pre-clinical testing

ii) FDA

iii) First pass effect

Q6) a) Answer any one of the following. **[6]**

i) Explain all the phases involved in clinical trials.

ii) Give a brief account of the function performed by the following in a pharma industry

a) R & D b) GLP

c) Documentation

b) Write a short note on (any two). **[6]**

i) Pharmacodynamics

ii) Distribution of drugs in body

iii) Differentiate between acute and chronic toxicity.

♦ ♦ ♦

Total No. of Questions : 6]

SEAT No. : ____

PD-3248

[Total No. of Pages : 5

[6478]-33
M.Sc. (Part - II)
DRUG CHEMISTRY
CCTP - 9 CHD - 362 : Stereochemical Principles and Applications
(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

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

[Stereochemistry]

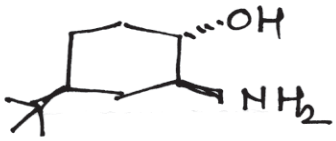
Q1) a) Attempt the following : **[8]**

i) Compound I do not show acidic property. Explain.

(I)

ii) Write the products when I and II treated with HNO_2/H^+. Explain with the mechanism.

(I)



(II)

iii) 2 α-cholestane-3-β-01 is cyclised to 2, 3 β epoxy cholestane several thousand times slowly than 3α-chloro cholestane-2-β-01. Explain.

iv) One of the isomer of 2-hydrindanone (meso) on reduction gives two meso alcohols; while the other (dl) gives only one alcohol.

b) Draw the conformations of cis-anti-cis perhydrophenanthrenes and comment on their stabilities and optical activity. **[3]**

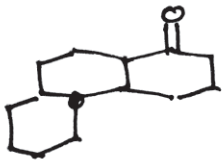
P.T.O.

Q2) a) Attempt any One of the following : **[6]**

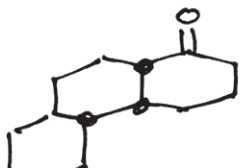
i) I) Explain the effect of allylic-OH on stereochemistry of epoxidation.

II) Chair-chair form of bicyclo [3.3.1] nonane is less stable than boat-chair form. Whereas cyclohexane 1, 3 dicarboxylic acid anhydride exists in chair-chair form. Explain.

ii) I) Compound A undergoes epimerisation on treatment with base whereas B does not. Explain.



A



B

II) Menthylchloride on treatment with base gives 2-menthene at a very slow rate. Explain.

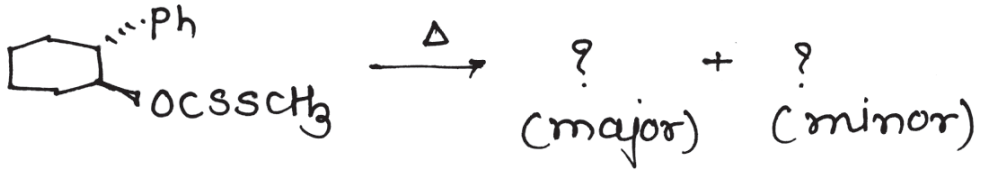
b) Write short notes on any Two of the following : **[6]**

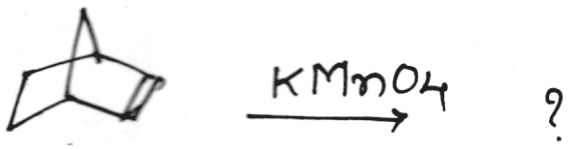
i) Bredt's rule and its limitations.

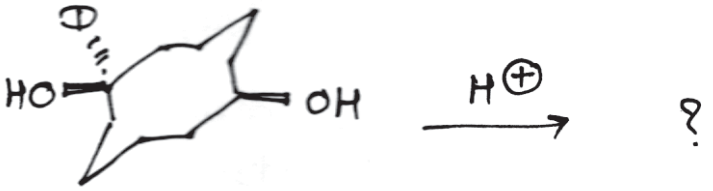
ii) 3 - Alkyl Ketone effect.

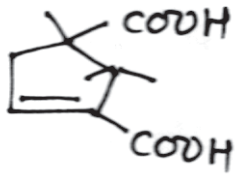
iii) Concept of I - Strain

Q3) Predict the product/s for any six of the following and explain the stereochemical principles involved in it. **[12]**

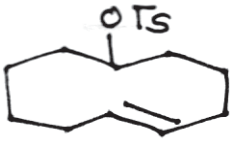
a) 

b) 

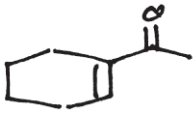
c) 

d) 

$\xrightarrow{\Delta,\ \Delta}$?

e) 

$\xrightarrow[\Delta]{PhNEt_2}$? + ?

f) 

$\xrightarrow[ii)\ H^+/H_2O]{i)\ PhMgBr}$?
iii) Br_2 / AcOH

g) 
$\xrightarrow[-15^\circ C]{HCl\ (g)}$? $\xrightarrow{\Delta}$?

SECTION - II

[Principles and Applications of Asymmetric Synthesis]

Q4) a) Comment on the following statements. Justify it with an appropriate example. **[8]**

i) Iminium salt as catalyst in Asymmetric epoxidation.

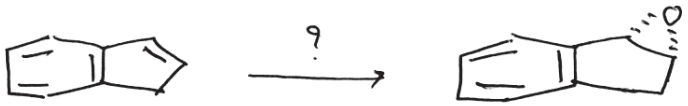
ii) BINAL - H as a chiral reducing agent.

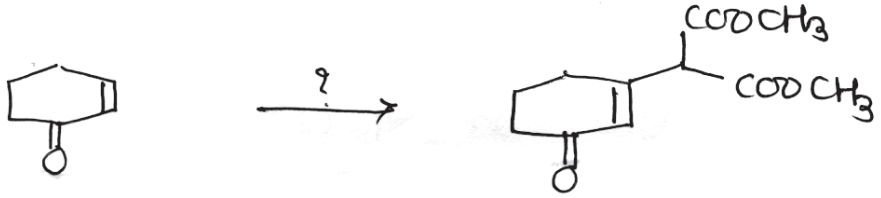
iii) Proline derived organocatalyst for enantioselective reduction of Ketone.

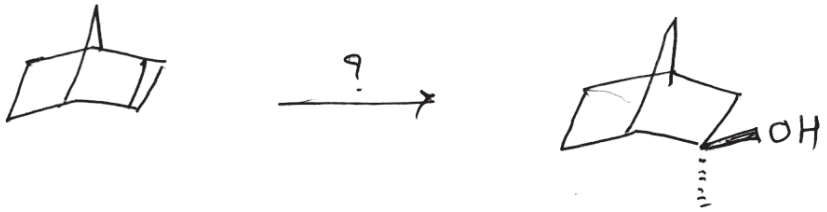
iv) Chiral pool is an important tool in asymmetric synthesis.

b) Explain Cram's chelate model with example. **[3]**

Q5) a) Give the suitable reagents for the following transformations and comment on the formation of the product [Any Two] **[6]**

i) 

ii) 

iii) 

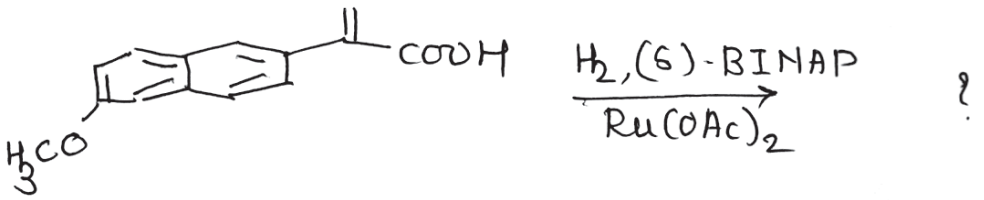
b) Write notes on any Two of the following : **[6]**

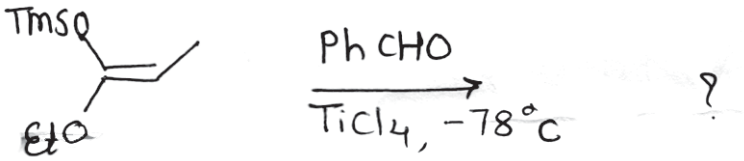
i) Asymmetric Dihydroxylation.

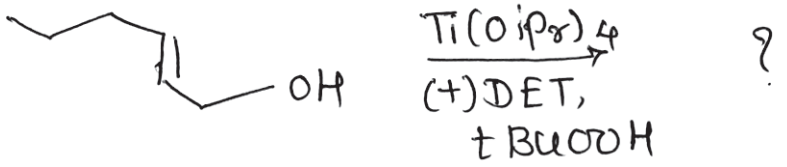
ii) Sharpless Asymmetric Epoxidation.

iii) Asymmetric Aldol reaction.

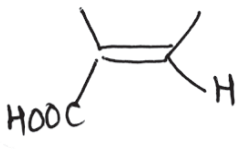
Q6) Complete the following conversions and suggest the correct stereochemistry of the product/s [any Four] **[12]**

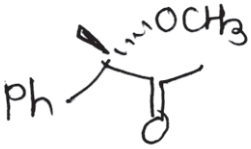
a) 

b) 

c) 

d)  i)  ii) Et_2AlCl,  iii) LiOBn ?

e)  i) $SOCl_2$ ii) (S)-Proline ? i) Br_2 ii) Bn_3SnH iii) $H_3O^{\oplus}$?

f)  i) $Zn(BH_4)_2$ ii) $H_3O^{\oplus}$?

Total No. of Questions : 6]

SEAT No. :

PD-3249

[Total No. of Pages : 6

[6478]-34

M.Sc. (Part - II)

DRUG CHEMISTRY

CBOP-3, CHD -363(A) : Chemistry of Heterocycles and Biologically Active Molecules

(2019 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

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

SECTION - I

Q1) a) Explain the following. **[8]**

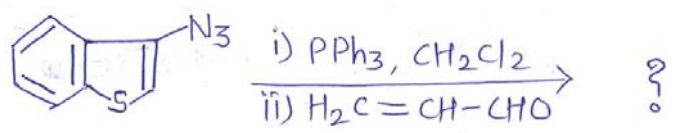
i) Nucleophilic substitution occurs exclusively at C-1 position rather than C-3 position in isoquinoline.

ii) Indole shows better selectivity for electrophilic substitution than benzofuran.

iii) Imidazole is stronger base than pyridine.

iv) Coumarin undergo cycloaddition reaction.

b) Predicts the product in the following. **[3]**

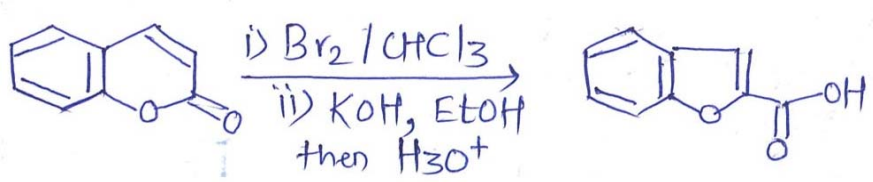
i) 

ii) 

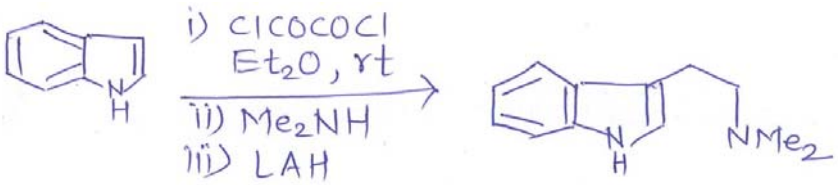
P.T.O.

Q2) a) Suggest the suitable mechanism for any one of the following. **[6]**

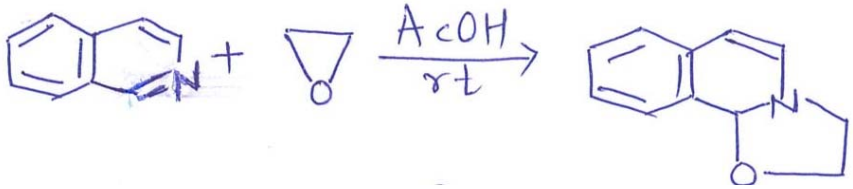
i) I)



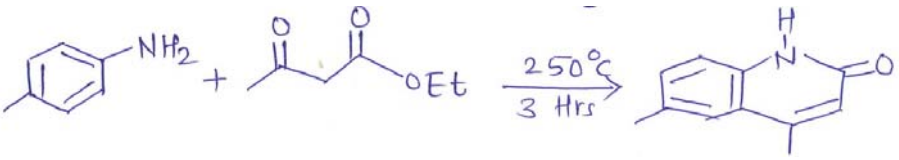
II)



ii) I)



II)



b) Write short notes on any two of the following **[6]**

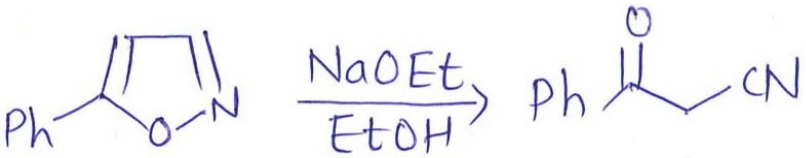
i) Fischer Indole Synthesis.

ii) Pechmann Coumarin Synthesis

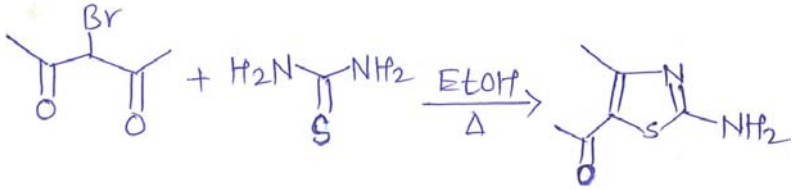
iii) Skraup Quinoline Synthesis

Q3) a) Suggest the suitable mechanism for any one of the following. **[6]**

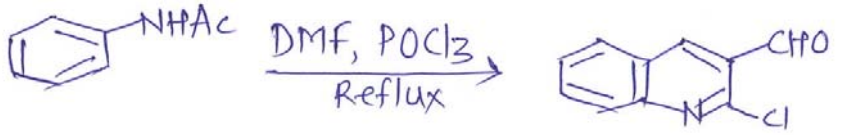
i) I)



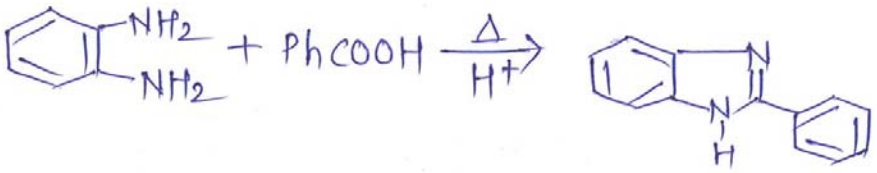
II)



ii) I)



II)

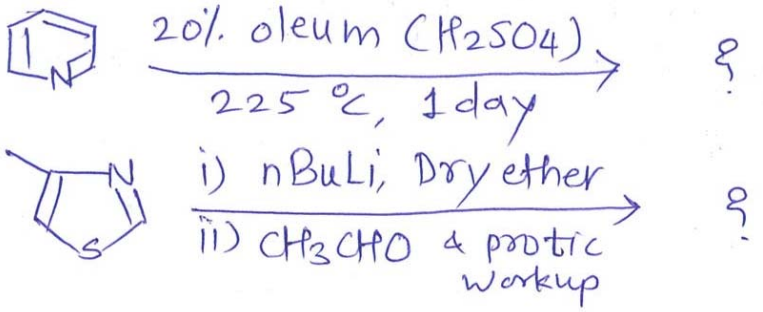


b) Answer any two of the following. **[6]**

i) 1, 3 oxazole has low boiling point than imidazole.

ii) Write short note on Modelung indole synthesis

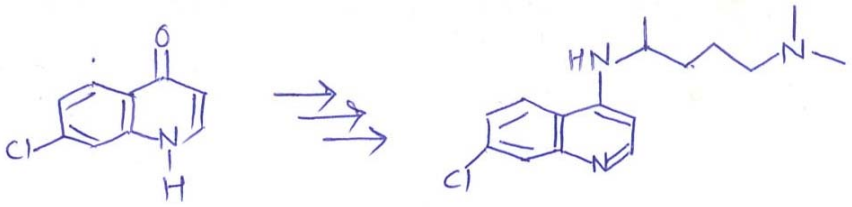
iii) Predict the product in the following.



SECTION - II

Q4) a) Describe the steps involved in the synthesis of following drug molecules. Explain the mechanism involved. **[8]**

i)



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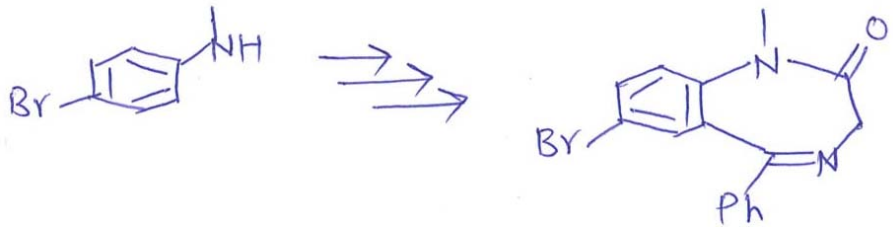
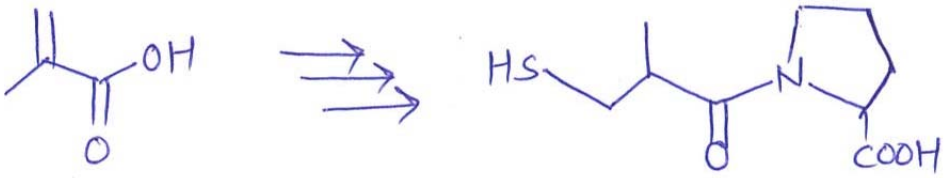
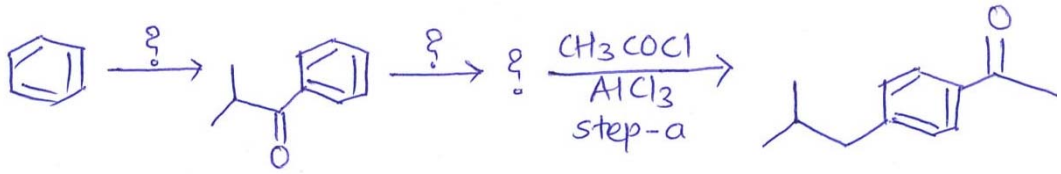


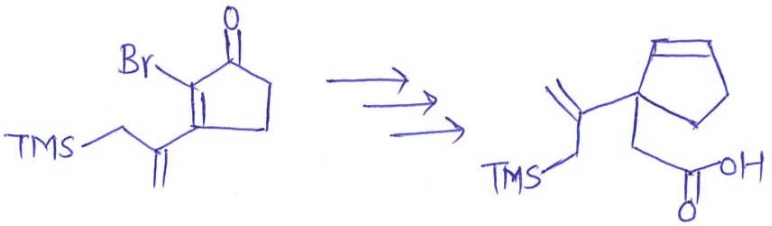
iii) 

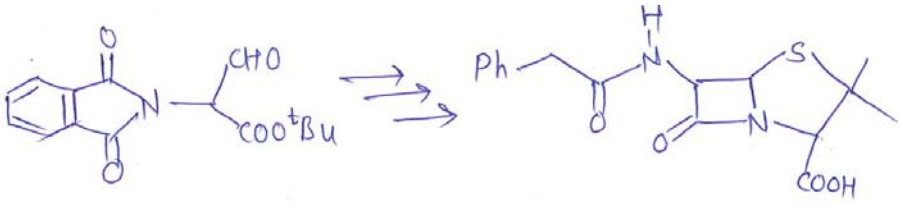
iv) 

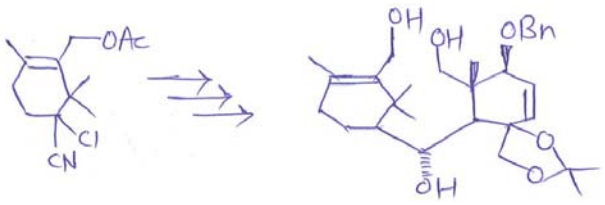
b) Insert the missing reagents/products in the following sequence of reactions. Explain the step-*a* with mechanism. **[3]**

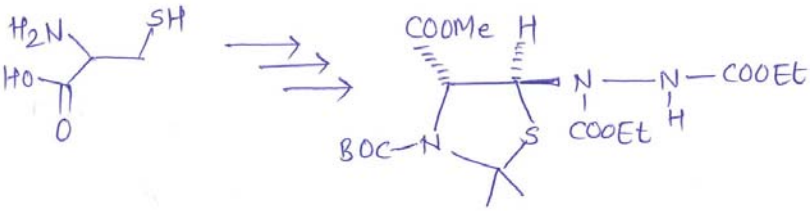


Q5) a) Describe the steps involved in the synthesis of the following molecules. Explain the stereochemistry & mechanism involved (any one) **[6]**

i) I) 

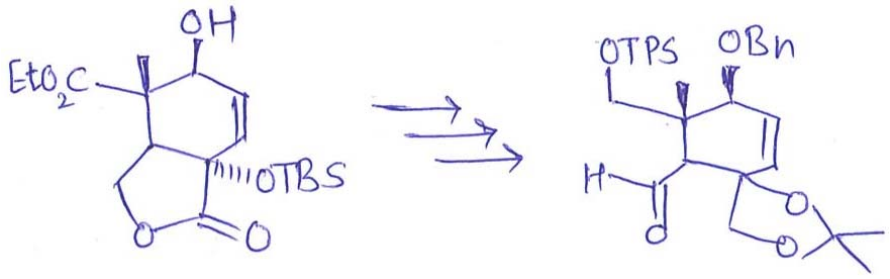
II) 

ii) I) 

II) 

b) Discuss the steps involved in the synthesis of the following molecules. Explain the stereochemistry and mechanism involved (any two) **[6]**

i)



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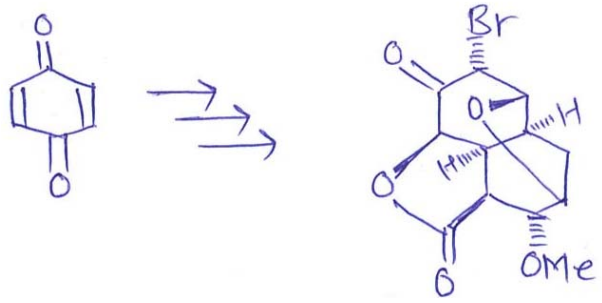

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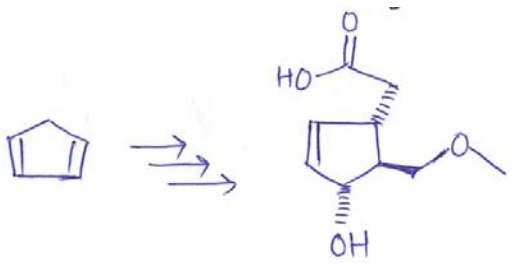
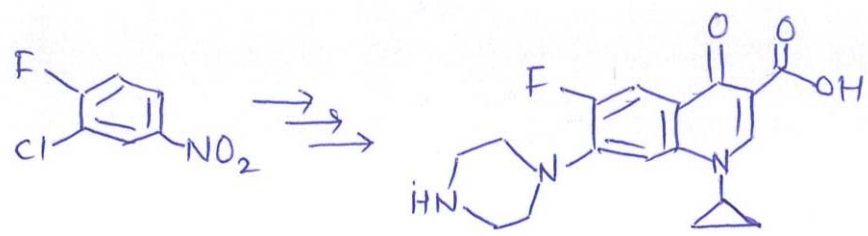
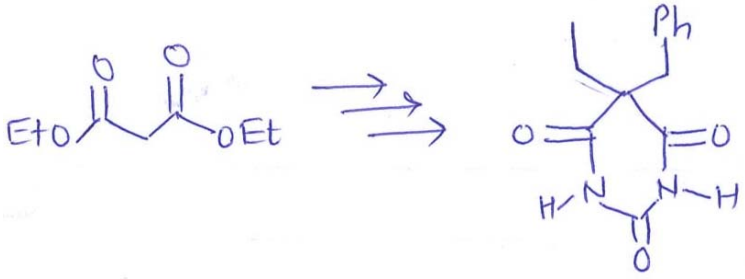


Q6) a) Describe the steps involved in the synthesis of the following drug molecules. Explain the mechanism involved (any one) **[6]**

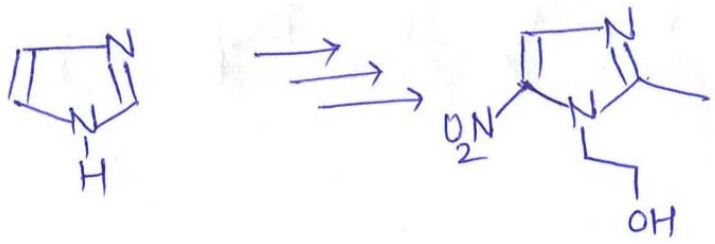
i) I)



II)



ii) I)



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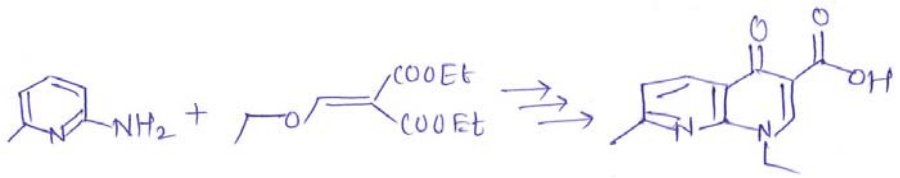
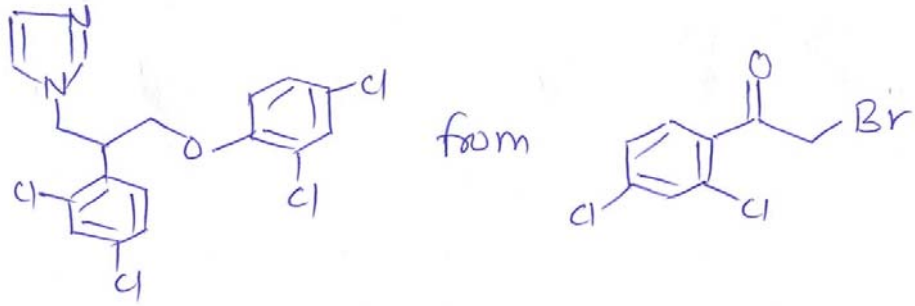


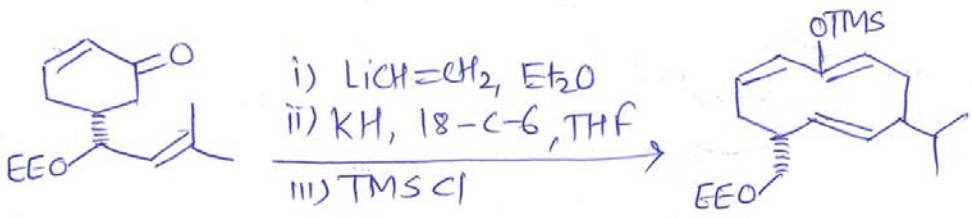
b) Answer any two of the following. **[6]**

i) Importance of TPAP/NMO in Taxol synthesis

ii) Devise a synthetic pathway for the following from the starting compound shown.



iii) Explain the mechanism



Total No. of Questions : 9]

SEAT No. :

PD-3250

[Total No. of Pages : 4

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M.Sc. (Part - II)

DRUG CHEMISTRY

CHD -363(B) :

Section - I : Immunology and Microbiology

Section - II : Bioinformatics, Biostatistics in Drug Discovery

Section - III : Entrepreneurship Development

(2019 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Attempt any two of I, II and III sections.***
2) ***Each section is for 35 marks.***
3) ***All questions are compulsory.***
4) ***Figures to the right indicate full marks.***
5) ***Answer to the two sections should be written in separate answer books.***

SECTION - I

CBOP-3, CHD - 363 (B) : Immunology and Microbiology

Q1) a) Define the following : **[8]**

i) Immunomodulator's

ii) MIC

iii) Allergy

iv) BOD

b) Comment on how microbes are isolased. Explain one of the methods in detail. **[3]**

P.T.O.

Q2) a) Answer any one of the following : **[6]**

i) What is the need for effluent treatment. Explain the process.

ii) Explain activation of antibody mediates immune response.

b) Discuss the following (any two) : **[6]**

i) Explain :

I) Adaptive immunity

II) Immuno suppresants.

ii) Describe different parts of a fermenter and their function.

iii) Describe a typical bacterial growth curve.

Q3) a) Answer any one of the following : **[6]**

i) Explain :

I) Industrial strain

II) Media design.

ii) Explain type - I or Type - II hyper sensitivity in detail.

b) Write a short note on (any two) : **[6]**

i) ELISA

ii) Media used for microbial growth.

iii) Explain the down stream process in fermentation.

SECTION - II

CBOP-3, CHD - 363 (B) : Bioinformatics, Biostatistics in Drug Discovery

Q4) a) Answer the following : **[6]**

i) Explain metobolomics.

ii) Describe the types of Biological databases in brief.

b) Write a short note on : **[5]**

i) Genome

ii) Structural bioinformatics

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

a) What is cheminformatics? Explain SMILE notations.

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

c) Explain structure bases drug discovery.

d) Describe the applications of genomics.

e) Write a short note on :

i) Docking

ii) Significance of standard deviation.

Q6) **Attempt any three of the following :** **[12]**

a) Explain the following ;

i) Standard deviation

ii) Multivariate analysis

iii) Sample and population

iv) Cumulative frequency

b) What is 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

c) Obtain the variance for the following distribution.

Class interval	40-45	45-50	50-55	55-60
Frequency	10	17	23	40

d) Define correlation and state the types of correlation. Compute Karl Pearson coefficient of correlation for the following data :

Age (x)	52	48	60	65	70
Systolic B.P.(γ)	147	138	130	149	152

SECTION - III

CBOP-3, CHD - 363 (B) : Entrepreneurship Development

Q7) a) Answer the following : **[6]**

i) What are the different factors that affect influence on Entrepreneurship Development?

ii) What is the basic concept of theory of profit by Knight.

b) Write short notes on : **[5]**

i) Enterpreneural search and Identification.

ii) Formulation of business plan.

Q8) **Answer any three of the following :** **[12]**

a) Explain the theory of social change.

b) What are the reasons for Entrepreneurial failure. Discuss the remedies to rectify it.

c) What are the differences between manager and Entrepreneur.

d) Give a brief overview of X-Efficiency theory.

Q9) **Attempt any four of the following :** **[12]**

a) Discuss Entrepreneurship as career.

b) Explain in brief the factors affecting entrepreneural growth.

c) Discuss corporate Entrepreneurship in brief.

d) Write a short note on 'Women Entrepreneur.

e) Discuss in brief the terms 'Creativity' and Innovations.

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Total No. of Questions : 6]

SEAT No. : ____

PD-3251

[Total No. of Pages : 3

[6478]-41

M.Sc. (Part - II)

DRUG CHEMISTRY

CCTP-10 CHD-460 : Advanced Medicinal Chemistry

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

SECTION - I

Q1) a) Discuss the uses and mode of action of the following drug molecules. **[6]**

i) Chlortetracycline

ii) Flucanazole

iii) Chloroquin

b) Answer the following : **[5]**

i) Discuss macrolide antibiotics. Explain their mechanism of action.

ii) Discuss in brief the development of I, II generation cephalosporins, clearly explain the benefits achieved in each generation.

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

a) Folate pathway is a very important target for variety of drugs. Explain.

b) Discuss the selective toxicity associated with :

i) Sulphonamides

ii) Fluorquinolones

P.T.O.

c) What are common fungal disorder? Explain how antifungal agents. Amphotericin B, flucytosine and flucanazole affect fungal biochemical processes.

d) Discuss how the following diseases are managed by current drugs.

i) AIDs

ii) Leprosy

e) Discuss any two mechanisms of bacterial resistance to antibiotics.

Q3) **Answer any three of the following :** **[12]**

a) Penicillin was known as wonder drug. Why? the semisynthetic derivatives of penicillin turned out to be better, How? Explain.

b) Draw a neat diagram of neuron & explain the steps involved in nerve conduction. How does diazepam & barbiturate affect the neuronal conduction?

c) Give a brief account of Antimetabolites as drugs.

d) What is cancer? What are typical characteristics of cancer cells? How do alkylating agents exhibit their effect.

SECTION - II

Q4) a) Discuss the following classes of the drugs : **[6]**

i) Opiod Analgesics

ii) Calcium channel Blockers

b) Answer the following : **[5]**

Give a brief account of following diseases.

i) Hypertension

ii) Stroke

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

a) Explain in brief Diabetes, symptoms and management of NIDDM.

b) Explain how the following group of drugs help in management of diseases.

i) Vasodilators

ii) Anticoagulants

c) What is pain? Explain the mechanism of pain and its management.

d) What are the Drugs used to treat following GI disorders.

i) Emesis

ii) Hyperacidity

e) Explain in brief lifecycle of plasmodium. Discuss the various strategies to control and treat Malaria.

Q6) **Answer any three of the following :** **[12]**

a) Explain the role of endocrine system in maintaining homeostasis. Explain the negative feed back mechanism. What are the functions of thyroid Hormones? What happens if they are under or oversecreted? How such abnormal secretions therapeutically rectified?

b) Discuss Inflammation. How do different analgesics and antiinflammatory drugs exhibit their activity.

c) Give a brief account of following CVS disorders.

i) Angina

ii) Congestive Heart failure

d) Explain the role of following classes of drug molecule in disease management

i) Organic Nitrates

ii) MAO inhibitors

iii) Sodium channel blockers

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Total No. of Questions : 6]

SEAT No. :

PD-3252

[Total No. of Pages : 2

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M.Sc. (Part-II)

DRUG CHEMISTRY

CCTP - 11. CHD - 461 : Drug Design

(2019 Pattern) (Semester -IV)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

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

Section - I

Q1) a) Define the following. **[8]**
- i) Signal transduction
- ii) Dependence
- iii) Potency
- iv) Inverse agonist

b) Explain the structure of the cell membrane with schematic diagram. **[3]**

Q2) a) Answer any one of the following. **[6]**
- i) Give a comment on case studies of statins.
- ii) Describe signaling mechanism for the tyrosine kinase receptor family.

b) Explain any two of the following. **[6]**
- i) Free - Wilson approach
- ii) Features of Ideal prodrug
- iii) Drug design based on pharmacokinetics.

Q3) a) Answer any one of the following. **[6]**
- i) Discuss the various Drug-receptor interactions theories.
- ii) Explain the structure of 4 - TM and 3-TM (Ion channel) receptor with well labelled diagram.

P.T.O.

b) Explain any two of the following. **[6]**

i) COMFA

ii) Sensitization and desensitization

iii) Enzyme inhibitor's as drug

Section - II

Q4) a) Define the following **[8]**

i) Linker

ii) Proteomics

iii) CADD

iv) Metabolomics

b) What is combinatorial chemistry? Discuss how it is used to make large number to compounds. **[3]**

Q5) a) Answer any one of the following. **[6]**

i) What is DNA Microarrays? How DNA micro arrays could be used to diagnose a disease? Explain in detail.

ii) What is parallel synthesis? Explain

I) Automated parallel synthesis

II) Haughton's teabag procedure

b) Discuss any two of the following. **[6]**

i) Virtual screening

ii) Antisense technology

iii) Monoclonal antibodies

Q6) a) Answer any one of the following. **[6]**

i) Explain Hybridoma technology with well labelled diagram.

ii) Explain the following computational methods.

I) Molecular mechanics

II) Quantum mechanics

b) Write a short note on (any two) **[6]**

i) 3D QSAR

ii) Molecular dynamics

iii) Human gene therapy

Total No. of Questions : 6]

SEAT No. :

PD-3253

[Total No. of Pages : 8

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M.Sc. (Part - II)

DRUG CHEMISTRY

CBOP-4, CHD-462(A) : Advanced Synthetic Methods in Chemistry

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

SECTION - I

Q1) a) Explain the following : **[8]**

i) Trityl chloride can be used for selective protection.

ii) Enamines are preferred from secondary amines rather than primary amines.

iii) The carboxylic acids can be synthesized using umpolung strategy from alkyl halide.

iv) Benzyloxycarbonyl protection is preferred over benzoyl protection of amino group of amino acids in peptide synthesis.

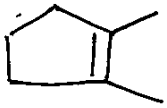
b) Explain the role of following reagents in organic synthesis. **[3]**

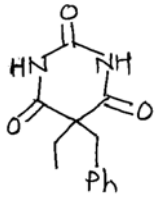
i) DCC

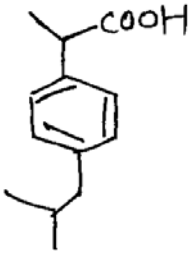
ii) MnO_2

P.T.O.

Q2) a) Using retrosynthetic analysis, suggest a suitable method to synthesize the following (any two) : **[6]**

i) 

ii) 

iii) 

b) Answer the following questions (any two) : **[6]**

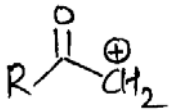
i) Explain the convergent synthesis with example.

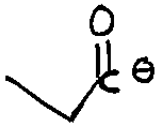
ii) Give two methods for synthesis of epoxides.

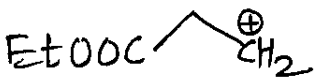
iii) Explain the role of protection in organic synthesis.

Q3) a) Answer any two of the following : **[6]**

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

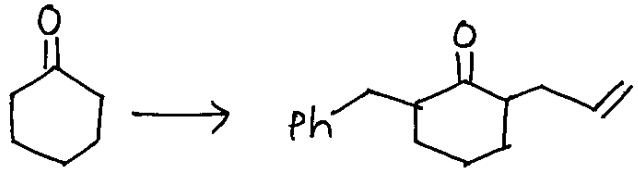
1) 

2) 

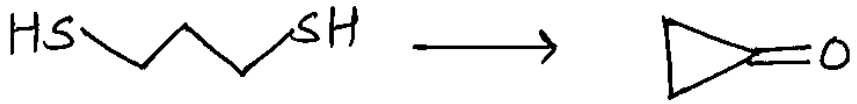
3) 

4) 

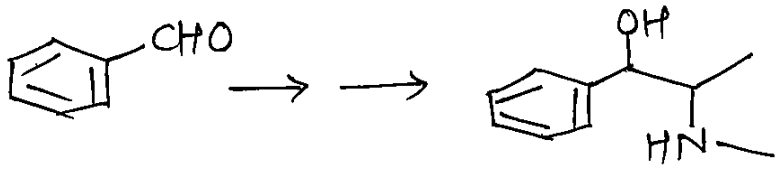
ii) Carry out the following transformation by enamine approach.



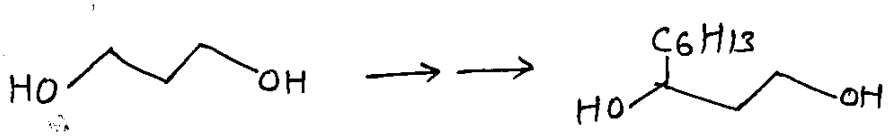
iii) Synthesize the following compound by using umpolung method



b) Arrange the reagents in proper order and write structures of the intermediate (any two) : **[6]**

i) 

Sn/HCl; $H_3CCH_2NO_2/K_2CO_3$; 1.eq. Me I

ii) 

PCC, NaOAC; H_3O^+, DHP, H^+; $C_6H_{13}MgBr$; MeOH,H^+

SECTION - II

Q4) a) Explain the following : **[8]**

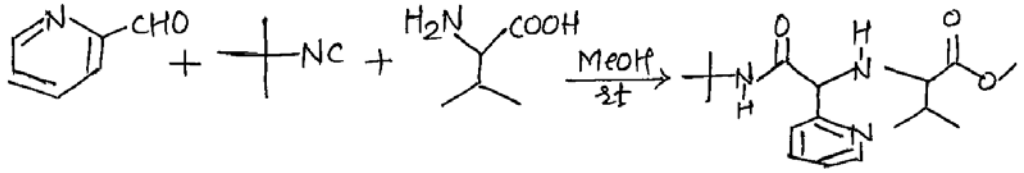
i) Nonterminal alkenes can be converted to terminal alkenes by use of hydroboration reaction.

ii) Enlist the component of Ugi reaction.

iii) Organophosphoranes prepared from triethyl phosphite are preferred over phosphoranes prepared from triphenyl phosphine.

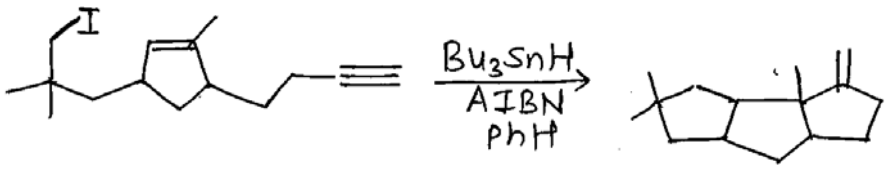
iv) How will you prepare aryl alkynes from aryl halide?

b) Write the mechanism for the formation of product given below. **[3]**

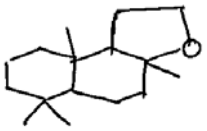


Q5) a) Answer any two of the following : **[6]**

i) What is Domino reaction? Explain the steps involved in the following reaction.

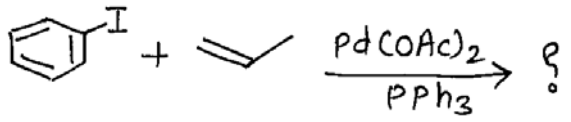


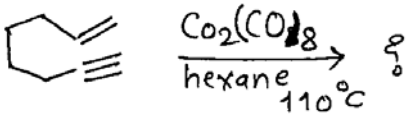
ii) Explain how biomimetic approach is used to obtain following compound

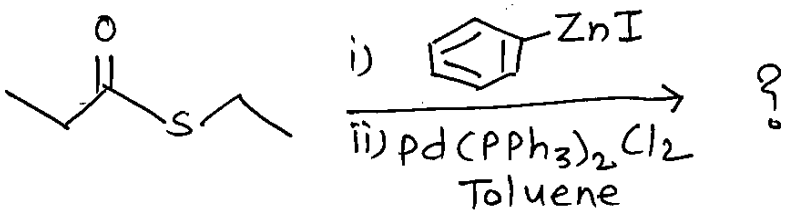


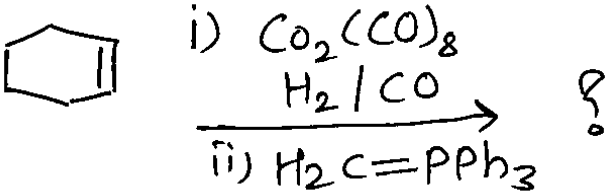
iii) Write notes on click chemistry.

b) Predict the product of any three of the following : **[6]**

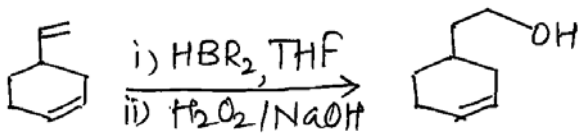
i) 

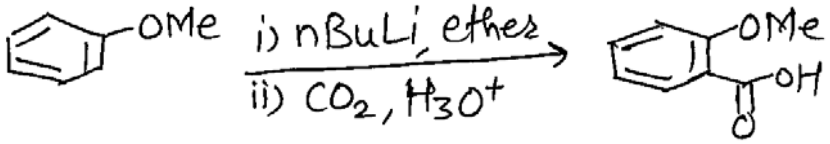
ii) 

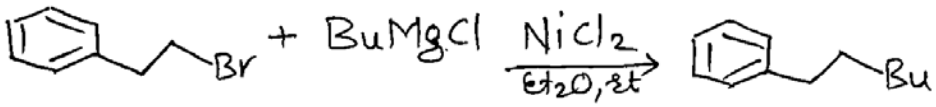
iii) 

iv) 

Q6) a) Suggest the mechanism of any two of the following : **[6]**

i) 

ii) 

iii) 

b) Write short notes on (any two) : **[6]**

i) Hiyama coupling reaction

ii) Stille coupling reaction

iii) Nazarov cyclization

Total No. of Questions : 6]

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[6478]-43

M.Sc. (Part - II)

DRUG CHEMISTRY

CBOP-4, CHD-462(B) : Supramolecular, Green Chemistry and Forensic Chemistry

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

SECTION - I

Q1) a) Answer the following : **[6]**

i) Give a brief account of solvent tree reactions.

ii) Discuss in brief intermolecular forces and their role in supramolecular catalysis.

b) Write short notes on : **[5]**

i) Various bond properties

ii) Principles of green chemistry.

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

a) What are different energy sources used in green chemical synthesis?

b) Explain the importance of green chemistry in day-to-day life using it's principles.

c) Explain solid phase organic synthesis.

d) Discuss the principle of molecular association using biological macromolecules.

e) Explain how various covalent bond properties are important in supramolecular reactivity.

P.T.O.

Q3) Answer any four of the following : **[12]**

a) Explain the transport processes with the help of anion carriers.

b) Explain the formation of supramolecular macrocycle using barbituric acid and 2, 4, 6 - triamino pyrimidine.

c) Explain the solid state organic synthesis giving at least one example of Michael addition and Beckmann rearrangement.

d) Applications of biocatalyst in organic synthesis.

e) Explain Ultra sound assisted substitution and addition reactions.

SECTION - II

Q4) a) Answer the following : **[6]**

i) Discuss different spot tests for opioid drugs.

ii) Applications of chromatographic techniques in forensic analysis.

b) Write short notes on : **[5]**

i) Designer drugs

ii) Clandestine laboratory investigation.

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

a) Give a brief overview of cheiloscopy.

b) What is the forensic significance of the tyre.

c) Explain how fingerprints are preserved and analysed.

d) Explain the use of spectroscopic techniques in detection of narcotic drugs.

e) Discuss the characterization of heroin and caffeine.

Q6) Answer any four of the following : **[12]**

a) Discuss the medicinal uses of narcotic drugs. Discuss what are the problems associated with their use.

b) Explain the use of chromatographic techniques in analysis of narcotic substances.

c) Explain the forensic significance of footprints

d) Explain the procedure of extraction of caffeine from biological sample.

e) Write a short note on cheiloscopy.