Reg. No.										

MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: MEDICINAL CHEMISTRY – I (PCH 601)

SPECIALIZATION: PHARMACEUTICAL CHEMISTRY

Wednesday, May 27, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 100

Answer ALL the questions.

1A. What is drug metabolism? Explain the events and the role of cytochrome P_{450} in oxidative biotransformation.

1B. Explain the strategies in drug discovery.

1C. Write the principle and applications of combinatorial chemistry.

(10+5+5 = 20 marks)

2A. What are pro-drugs? How are they classified? Add a note on their design in chemotherapy of cancer.

2B. Explain the types of searching performed in the management of information in drug discovery.

2C. Explain the types of assays performed using HTS.

((7+3)+5+5 = 20 marks)

3A. Explain the steps involved in framing a regression equation or QSAR equation.

3B. Explain the various steps involved in computer aided molecular design. What are the advantages and disadvantages of CADD?

(10+10 = 20 marks)

4A. Discuss with examples the designing of an analog by branching and alteration in chain length.

4B. Explain the energy components for intermolecular non-covalent drug-receptor interactions.

(10+10 = 20 marks)

5A. Define receptor, agonist, partial agonist and antagonist. Discuss drug-receptor theories.

5B. Explain in detail the rational design of mechanism based enzyme inhibitors.

(10+10 = 20 marks)

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: MEDICINAL CHEMISTRY – II (PCH 602)

SPECIALIZATION: PHARMACEUTICAL CHEMISTRY

Thursday, May 28, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 100

Answer ALL the questions.

1A. Explain briefly the isolation, chemistry and structural modifications of vitexin.

1B. Elucidate the structure of Lupeol by spectral methods.

(12+8 = 20 marks)

2A. How do you establish the

i) Basic skeleton

ii) position of hydroxyl group and double bond

iii) nature and position of side – chain in cholesterol with the help of chemical and spectral data.

2B. Write a note on the chemistry of anti-inflammatory agents of plant origin.

(14+6 = 20 marks)

3A. Write the biosynthetic pathway in which steroids are formed.

3B. Explain how natural products acted as leads in the design of new drug candidates? Discuss at least with two case histories.

(10+10 = 20 marks)

4A. Discuss chemistry of anticancer agents of natural source.

4B. Discuss the chemistry of some of the carbohydrates which are of pharmaceutical interest. Add a note on their utility.

(10+10 = 20 marks)

5A. Explain the structure Elucidation of Vincristine.

5B. Give an account of the spectral characteristics of Xanthotoxin.

(10+10 = 20 marks)

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: MEDICINAL CHEMISTRY –III (PCH 603)

SPECIALIZATION: PHARMACEUTICAL CHEMISTRY

Friday, May 29, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 100

Answer ALL the questions.

1A. Explain the following:

i) Protease inhibition assay

ii) Phospho diesterase inhibition assay

1B. Explain in-vivo screening methods for anti cancer activity.

(10+10 = 20 marks)

2A. What is microbial transformation? Explain the various practical aspects of microbial transformations.

2B. Explain in detail the different aspects of infringement of patent in India and US.

2C. Explain the nonclinical toxicity studies and their importance.

(5+8+7 = 20 marks)

3A. What are polyclonal antibodies? Mention their applications and add a note on the structure of antibody.

3B. What are immuno suppressants? Classify them with examples.

3C. Explain site directed mutagenesis and give its applications.

3D. How do you use enzyme and receptor as drug targets? Explain with suitable examples.

(5+5+5+5 = 20 marks)

4A. How are oligonucleotides used as therapeutics? Explain.

4B. Explain how ion channels are used as drug targets.

4C. What are reversible proton pump inhibitors? Explain their design.

4D. Explain the SAR of irreversible proton pump inhibitors.

(5+5+5+5 = 20 marks)

5A. What is first order and second order asymmetric transformation? Explain with suitable examples.

5B. Explain alpha-beta dehydrogenation in peptido mimetic drug design with suitable examples.

5C. How is resistance developed towards beta-lactams and penicillins?

5D. What is gene therapy strategy in hypertensive research?

(6+6+4+4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: ADVANCED PHARMACEUTICAL CHEMISTRY (PCH 604)

SPECIALIZATION: PHARMACEUTICAL CHEMISTRY

Saturday, May 30, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 100

Answer ALL questions.

1A. What are elimination reactions? Classify them with examples. Explain E_1CB mechanism with its limitations. Add a note on pyrolytic eliminations.

1B. Explain SN_i and benzyne mechanisms with suitable examples.

((5+3+2)+10 = 20 marks)

2A. Discuss possible synthetic strategies for the direct synthesis of butyryl moiety of butyrophenone. Write principles of synthetic planning for designing a synthesis.

2B. How are the following conversions effected?

i) p–nitrotoluene to 2–bromo–3–methyl benzoic acid.

ii) Anthranilic acid to 2–chlorobenzoic acid.

iii) 2–phenyl indole to 2–phenyl indole–3–aldehyde.

2C. Give reasons:

i) In the acid catalysed dehydration of 3, 3–dimethyl–2–butanol, the yield of 3, 3–dimethyl–1–butene is only 3% whereas those of 2, 3–dimethyl-2-butene (64%) and 2, 3–dimethyl–1–butene(33%) are appreciably large.

ii) Butyl benzene is prepared by Friedel–Craft's butanoylation followed by reduction and not by direct butylation.

(10+6+4 = 20 marks)

3A. What is conformational analysis? Discuss conformations in decalins, perhydrophenanthrene, perhydroanthracene and in rings possessing hetero atoms and mention their stability.

3B. Explain the asymmetric synthesis of amino acids.

(15+5 = 20 marks)

4A. Explain the fate of excited molecules by Jablonski diagram. Discuss the photochemistry of carbonyl compounds.

4B. Discuss the generation, fate and two applications of carbenes.

(15+5 = 20 marks)

5A. What are enolates? How are they generated with control over regio and stereoselectivity?

5B. Discuss 'O' versus 'C' alkylation, effects of solvent, counter cation and electrophiles.

(10+10 = 20 marks)

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: SPECTRAL AND CHROMATOGRAPHIC METHODS IN PHARMACEUTICAL CHEMISTRY (PCH 605)

SPECIALIZATION: PHARMACEUTICAL CHEMISTRY

Monday, June 01, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 100

1A. Sketch a DEPT spectrum of ISPENOL and explain how it helps in establishing the different types of carbons.

1B. Explain the following in NMR spectroscopy

i) Anisotropic effect.

ii) Coupling constant and splitting pattern.

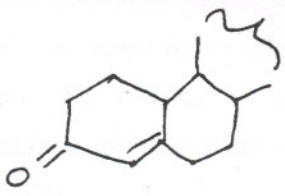
iii) Shift reagent in NMR.

(8+(4×3) = 20 marks)

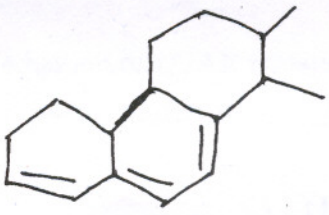
2A. Discuss the various types of electronic transition in ultraviolet Spectroscopy giving example in each case.

2B. Following the Woodward -Fieser rules, calculate the absorption maximum for each of the following compounds.

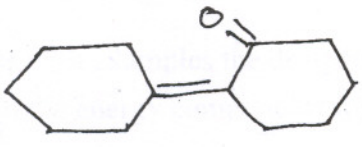
i)



ii)



iii)



2C. Explain the effect of solvents on $n \rightarrow \pi^*$ and $\pi - \pi^*$ transitions.

2D. What is the used for the following steps in HPTLC?

i) Prewashing

ii) Conditioning

iii) Preconditioning

iv) Selection of mobile phase

v) Nitrogen gas

(5+3+2+10 = 20 marks)

3A. Explain how one may use HPLC to accomplish the following:

i) Isolation of alkaloid and glycoside

ii) Control of microbiological processes.

Give suitable examples in support of your answer.

3B. How do you differentiate between semipreparative and preparative HPLC systems?

(14+6 = 20 marks)

4A. Explain the mass fragmentation pattern of the following compounds:

i) Acetophenone

ii) Benzanilide

iii) Nitrobenzene

iv) 2, 2 diethyl pentane

4B. Write the principles and techniques of the following:

i) GC-MS ii) HREIMS

(12+(4+4) = 20 marks)

5A. Give the characteristics IR peaks for Diethyl ether and Hydrochloride salt of alanine.

5B. Write a note on FTIR spectroscopy.

5C. Explain the instrumentation of SEC.

5D. Discuss the different columns used in GLC.

(5+5+6+4 = 20 marks)