P' Analysis Sem VII (old) 2014-15

QP Code : 09601

(2 Hours) [Total Marks : 40

N.B : (1) Question No. 1 is compulsory.
(2) Attempt any four questions out of remaining six questions.
(3) Draw neat labeled diagram wherever necessary.
(4) Figures to the right indicate complete marks.
(5) Answer all sub questions together.
(6) Use of calculator is allowed.

1. (a) Explain the following terms (any three) 6
   (i) Retention Time
   (ii) Precision
   (iii) Head Space Analysis
   (iv) 'F' test.
   (b) Name of the following (any two) 2
   (i) One HPLC detector used in analysis of sugars.
   (ii) Functional group present in a strong cation exchange resin.
   (iii) One size exclusion technique in which organic solvent is used as mobile phase.

2. (a) With the help of suitable diagram, explain functioning of flame ionisation detector. 4
   (b) From the data given below, determine the correlation coefficient between fluorescence and concentration of drug X. 4

Concentration (ng/ml)	Absorbance
1000	20.1
2000	39.7
3000	61.2
4000	79.5
5000	100

3. (a) Define Limit of Detection and Limit of Quantitation. Describe two methods for determination of Limit of Detection and Limit of Quantitation. 4
   (b) Discuss various techniques in development of paper chromatography. 4

4. (a) Describe the principle of Themogravimetric analysis. Write two pharmaceutical applications of the same. 4

[TURN OVER

(b) A chromatogram of mixture A and B provided the following data on a 50 cm column. 4

	Retension Time (min)	Width of peak base (w) (mm)
Non-retained	1.8	—
A	5.6	0.42
B	11.5	0.61

Calculate :— (i) Number of theoretical plates for
(ii) Resolution between A and B.

5. (a) Classify detectors used in HPLC. and explain each type. Name two detectors of each type. 4

(b) Give two point of differentiation between Thin Layer chromatography and High performance Thin Layer chromatography. Discuss in short detection technique in HPTLC. 4

6. (a) Differentiate between Ion exchange and Ion pair chromatography with respect to principle, involved and stationaly phase and mobile phases used. 4

(b) Describe various types of Gas chromatography columns based upon distribution of stationaly phase. 4

7. Write short notes on (any two) :— 8

(a) Sampling of solids
(b) Gel chromatography
(c) Quantitation techniques in HPLC
(d) DSC.

Sem VII Rev 2014-15

Bio-pharmaceutics

QP Code : **09597**

(2 Hours) [Total Marks:40

N. B. : (1) Question No. 1 is compulsory.
(2) Attempt any **four** questions of the remaining **six** questions.

1. Comment briefly on following. 8
(a) Absorption of methyl dopa and levodopa is by active transport mechanism.
(b) Micronization of hydrophobic drugs usually results in reduction of surface area and dissolution rate.
(c) Hypoalbuminaemia can severely impair protein drug binding.
(d) Alkalinization of urine with bicarbonate promotes excretion of acidic drugs.

2. (a) Explain passage of drugs across biological barriers by facilitated diffusion. 4
(b) What are the parameters to quantify gastric emptying. For which drugs rapid gastric emptying is desirable and when should it be slow. 4

3. (a) How do the physico-chemical properties of drug affect tissue permeability and hence the distribution of drugs. 4
(b) Discuss displacement interaction. What characteristics of the displacer and the displaced drug are important for displacement interactions to be clinically significant. 4

4. (a) Discuss concept of renal clearance. 4
(b) How can the principle of competitive inhibition of tubular secretion be put to therapeutic use. 4

5. Describe plasma conc Vs time curve after extravasaular administration. How will you determine absorption rate constant by method of residuals. 8

6. Write short notes on :- **(any two)** 8
(a) Official dissolution apparatus as per I.P.
(b) pH-partition hypothesis
(c) Extraction Ratio.

BK-Con. 7036-14.

[TURN OVER

7. When 120 mg of a drug was given as I.V. bolus, the following plasma concentration time relationship (C in mg/L and t in hr) was observed

$$C = 8.2\ e^{-0.19t}$$

Determine the following :-

(a) Elimination half life, apparent volume of distribution, total systemic clearance and area under the curve (zero to infinity) 2

(b) What is the plasma concentration after 8 hours. 1

(c) How much drugs left in the body after 10 hours. 1

(d) The percent dose remaining after 11 hours. 2

(e) The time required to eliminate 35% of the dose. 2

Sem VII Rev 2014-15

med-Chem

QP Code : 09586

(2 Hours) [Total Marks : 40

N.B. (1) Question No. 1 is **compulsory**.
(2) Attempt **four** more questions from remaining **six** questions.
(3) Support your answers with **relevant structures** wherever **required**.

1. Write the structure and the major therapeutic use of the following (any **eight**) :— 8
   (a) 2-[2'-hydroxy-3-(propylamino)propoxy]-3-phenylpropiophenone
   (b) 3-acetoxy-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-1,5-benzothiazepin-4(5H)one
   (c) 5-(2,5-dimethylphenoxy)-2,2-dimethylpentanoic acid
   (d) 1-cyclohexyl-1-phenyl-3-pyrrolidin-1-ylpropan-1-ol
   (e) A β-blocker with arylethanolamine moiety
   (f) A selective α_1-antagonist containing furan ring
   (g) A long acting ACE inhibitor with a cyclopentylpyrrolidine nucleus
   (h) A valine-containing angiotensin II receptor antagonist
   (i) A reversible inhibitor of acetylcholine esterase which lacks CNS activity

2. Justify the following statements. Write relevant structures wherever required :— 8
   (a) Salmeterol is the longest acting beta agonist.
   (b) Ephedrine is directly acting and pseudoephedrine is indirectly acting adrenergic agent
   (c) Activity of Class I antiarrythmic drugs is pH dependent.
   (d) An antidote for insecticide poisoning needs to be a very strong nucleophile.

3. (a) Give schemes for the synthesis of the following (any **two**) :— 6
      (i) Propranolol
      (ii) Cyclopentolate
      (iii) Nifedipine
   (b) State the important groups involved in the binding of norepinephrine to its receptor. Indicate the nature of binding and the amino acids involved in the same. 2

4. (a) Predict the structures of atleast two phase I metabolites of the following and label them as active / inactive : 4
      (i) Epinephrine
      (ii) Lidocaine
   (b) Discuss the effect of the following modifications on the activity of acetylcholine : 4
      (i) Introduction of α-methyl group
      (ii) Introduction of β-methyl group
      (iii) Replacement of acetate group by carbamate
      (iv) Replacement of the two hydrogens of the acetyl group by aromatic and carbocyclic rings.

5. (a) Discuss the mechanism of action of the following drugs :— 4
   (i) Isosorbide dinitrate
   (ii) Amiodarone.
   (b) Classify the following drugs into various chemical classes of muscarinic antagonists and write their structures. 4
   Cyclopentolate, Procyclidine, benztropine, Tropicamide

6. (a) Discuss the structure-activity relationship of 1,4-dihydropyridines. 4
   (b) Discuss potassium channel agonists and antagonists. 4

7. Write short note on any two of the following :— 8
   (a) Angiotensin II receptor antagonists
   (b) Gangiion blockers
   (c) α-antagonists

Sem VII Rev 2014-15

P' Cognosy

QP Code :09593

(2 Hours) [Total Marks : 40

N. B. : (1) Question No. 1 is compulsory.
(2) Answer any four from the remaining.
(3) Draw structures and diagrams wherever necessary.

1. (a) Give pharmacogynostic scheme of "Kurchi". 5
(b) Give an account of any two drugs containing Naphthaquinone glycosides. 3

2. (a) Describe preparation of "Aloes". Discuss different types of aloes and chemical tests to identify aloes. 5
(b) Give source, preparation and uses of papain and urokinase. 3

3. (a) Write a short note on "Senna". 5
(b) Give the biogenetic pathway for synthesis of "Quinine". 3

4. (a) Give the source, life cycle and constituents of Ergot. 5
(b) Give an account of drugs containing cynogenetic glycosides. 3

5. (a) Discuss source, collection, preparations and constituents of "Opium". 5
(b) Write a short note on any two cellulosic fibres. 3

6. (a) Give an account of Gingko biloba and Hydrocotyle as Nutraceuticals. 5
(b) Write a short note on polyvalent snake venoms antivenins. 3

7. Write short notes on (any two) :- 8
(a) Rauwolfia and ipecac.
(b) Any two drugs containing Tropane allkaloids.
(c) Drugs obtained from mineral origin.

BK-Con.:5255-14.

Sem VII RevV 2014-15

P'cology

QP Code : 09595

(2 Hours) [Total Marks :40

N.B. : (1) Question no **1** is **compulsory.**
(2) Attempt any **three** questions from the remaining **four** questions.
(3) **All** questions **carry** equal marks.

1. Answer in short (any **five**) :—
   (a) Explain the mechanism of action of sodium valproate.
   (b) Describe the role of carbidopa in treatment of Parkinson's disease.
   (c) Write a note on 'Neuroleptanalgesia'.
   (d) Explain histamine induced 'Triple Response'.
   (e) Give the therapeutic applications of Amphetamine.
   (f) Mention the symptoms and treatment of methanol poisoning.

2. Explain the theories and clinical features of schizophrenia. Classify antipsychotic drugs. Discuss the pharmacological actions, therapeutic uses and toxicity of chlorpromazine.

3. Differentiate between sedatives and hypnotics. Give an account of non barbiturate drugs used as sedatives and hypnotics.

4. Discuss the pathophysiology and clinical manifestations of bronchial asthama. Give an account of drugs used in bronchial asthama.

5. Write short notes on (any **two**) : —
   (a) Antidepressants.
   (b) Ultra short acting barbiturates.
   (c) Immunostimulants.
