PURUS – IV (2011 COURSE): WINTER - 2016

SUBJECT : PHARMACEUTICAL CHEMISTRY – VI (ORGANIC)

Day : Friday
Date : 11/11/2016

Time : 02.00 PM TO 05.00 PM
Max. Marks : 80

N.B.:

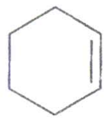
1) **Q.No.1** and **Q.No.5** are **COMPULSORY.** Out of remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 Answer **ANY FIVE** of the following. **[10]**

a) Why sucrose is non-reducing sugar?

b) Complete the following reaction:

 $\xrightarrow[\text{Peroxide}]{\text{N - bromosuccinamide}}$?

c) How do you account for experimentally observed $[\alpha] = -39^0$ for invert sugar?

d) What will happen when lactose is treated with Br_2 / water?

e) Write equations to show how D-glucose could be converted into D-mannose.

f) Complete the following reaction:

$$CH_2 = CH - CH_3 + HBr \xrightarrow{\text{Peroxide}}$$

g) Explain the configuration of Free radicals using suitable example.

Q.2 **a)** Explain in brief cyclic pyranose structure for (-) fructose. **[05]**

b) Discuss the structure and reactions of Lactose. **[10]**

Q.3 Discuss **ANY THREE** of the following: **[15]**

a) Free radical polymerization.
b) Radical halogenation.
c) Cyclic structure of glucose.
d) Structure of maltose.

Q.4 Write short notes on **ANY THREE** of the following: **[15]**

a) Free radical generation
b) Autooxidation
c) Glyosides and their medicinal uses
d) Mutarotation

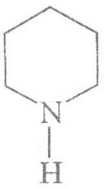
P.T.O.

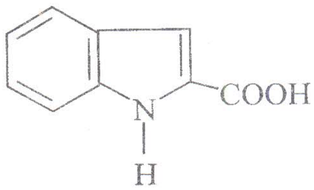
SECTION – II

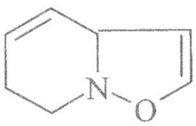
Q.5 Answer **ANY FIVE** of the following: **[10]**

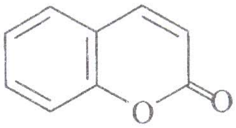
a) Conditions for sulphonation and nitration of thiophene are different than pyridine. Explain.

b) Write IUPAC names of **ANY TWO** of the following heterocycles:

i) 

ii) 

iii) 

iv) 

c) What will happen if thiazole is treated with H_2SO_4 and HNO_3?

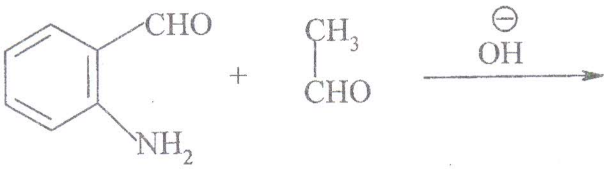
d) Explain the following order of reactivity towards electrophiles:
Thiopene <Furan <Pyrrole.

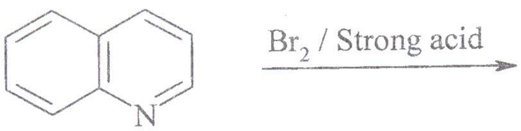
e) Why α-amminoacid solutions behave as electrolytes?

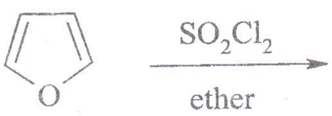
f) What is an isoelectric point?

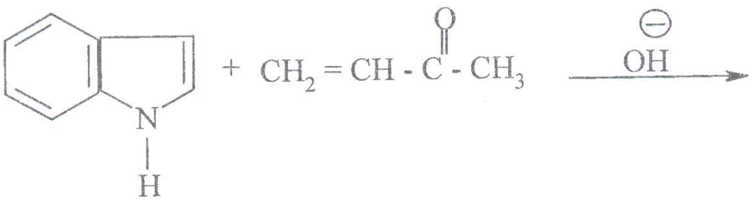
g) Write reaction equation for Sanger method of endgroup analysis.

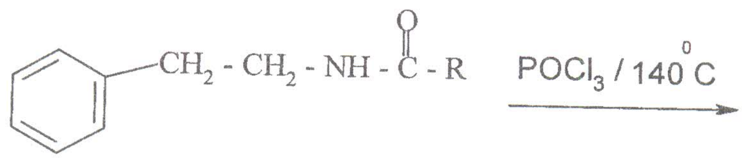
Q.6 a) Complete **ANY FIVE** of the following: **[10]**

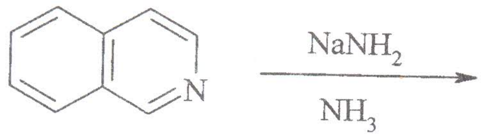
i) 

ii) 

iii) 

iv) 

v) 

vi) 

vii) $CH_3\,CHO + Br_2 + \underset{CH_2-OH}{\underset{|}{CH_2}}-OH + NH_2\,CHO \longrightarrow$

b) Give methods of synthesis of thiazole. **[05]**

Q.7 Give methods of preparation, chemical reactions and medicinal uses of **ANY TWO** of the following: **[15]**

i) Pyrrole **ii)** Pyridine **iii)** Imidazole.

Q.8 a) Discuss methods of synthesis and chemical reactions of α-amino acids. **[09]**

b) Write notes on **ANY TWO** of the following: **[06]**

i) Skraup synthesis

ii) Protein structure

iii) Bishler Napiaralski reaction

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PURUS-IV (2011 COURSE): WINTER - 2016
SUBJECT: PHARMACEUTICAL ANALYSIS-II

Day: Tuesday
Date: 15/11/2016

Time: 02.00 PM TO 05.00 PM
Max. Marks: 80

N.B:

1) **Q. No.1** and **Q. No.5** are **COMPULSORY.** Out of remaining solve **ANY TWO** from Section-I and Section-II each.
2) Both the sections should be written in the **SEPARATE** answer books.
3) Draw neat labeled diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Answer **ANY FIVE** of the following: **(10)**

a) Define Electromagnetic Radiation with its wave properties.

b) How pH meter is calibrated?

c) Enlist factors affecting Limiting Current.

d) Explain types of cells in conductivity meter.

e) Classify instrumental methods of analysis.

f) Why nitrogen gas is passed in polarographic apparatus?

Q.2 a) What is a polarogram? Explain its Salient features. Discuss factors affecting Diffusion Current. **(08)**

b) Explain polarographic apparatus with its advantages and disadvantages. **(07)**

Q.3 a) Classify various electrodes used in potentiometry. Explain in detail reference electrodes. **(08)**

b) Write merits and demerits of potentiometric titrations and give potentiometric titration curves of :- **(07)**
i) Aqueous titrations.
ii) Redox titrations.

Q.4 Write note on **ANY THREE** of the following: **(15)**

a) Applications of Polarography

b) Amperometric Titrations

c) Classification of Instrumental Analysis

d) Methods to determine pH

P.T.O.

SECTION-II

Q.5 Answer **ANY FIVE** of the following: **(10)**

a) Define Ohm's Law, Conductance, Specific Conductance and Equivalent Conductance.

b) State specific applications of Optical Rotatory Dispersion.

c) Explain factors affecting Refractive Index.

d) Define Specific Refraction and Molar Refraction.

e) Gravimetric assay of Calcium as Calcium oxalate.

f) What is effect of dilution on conductance?

Q.6 **a)** Draw and explain Conductometric curves for **(08)**

i) Titration of strong acid and strong base.
ii) Titration of weak acid and strong base.
iii) Titration of mixture of weak acid and strong acid with strong base.

b) Explain theory, principle and instrumentation of a conductivity meter. **(07)**

Q.7 **a)** Discuss basics of refractometry. Explain types of refractometers. **(08)**

b) Enlist components of a polarimeter with functioning of each parts. **(07)**

Q.8 Write note on **ANY THREE** of the following: **(15)**

a) Pharmaceutical applications of refractometry.

b) Cotton effect and Circular Dichroism.

c) Drying and ignition in Gravimetric Analysis.

d) Applications of Polarimetry.

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PURUS – IV (2011 COURSE) : WINTER - 2016
SUBJECT : PHYSICAL PHARMACY –II

Day : Thursday
Date : 17/11/2016

Time 02.00 PM TO 05.00 PM
Max. Marks : 80

N.B.

1) Q.1 and Q.5 are **COMPULSORY.**
2) Out of the remaining attempt any **TWO** questions from each Section.
3) Answers to both the sections should be written in **SEPARATE** answer books.
4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 Answer the following any **FIVE :** **(10)**

a) Suspensions are thermodynamically unstable. Explain.
b) What is HLB? Classify surfactants on basis of HLB.
c) What are sedimentation parameters?
d) Define : **i)** Surface tension **ii)** Gold number.
e) Define contact angle and give its significance.
f) Enlist different types of colloids with example.

Q.2 a) Discuss the signs of physical instability in an emulsion. **(07)**
b) Give an account of different kinetic methods to determine molecular weight of colloid. **(08)**

Q.3 a) Explain different methods used to determine surface and interfacial tension. **(07)**
b) Give an account of applications of surfactant in pharmacy. **(08)**

Q.4 Write notes on any **THREE:** **(15)**

a) Controlled flocculation
b) Adsorption isotherm
c) Spreading coefficient and its applications
d) DLVO theory

SECTION – II

Q.5 Answer the following any **FIVE :** **(10)**

a) What is meant by plug flow? How it can be overcome?
b) Explain in short packing arrangement of particles in a powder.
c) Enlist different types of viscometers.
d) What is angle of repose and carr's consolidation index?
e) Write name and formula for equation governing settling of particles.
f) What is meant by dilatant flow?

Q,6 a) Explain in detail methods to determine surface area of particles. **(07)**
b) Give an account of derived properties of powder. **(08)**

Q.7 a) Give an account of methods to determine polymorphism. **(07)**
b) Explain in detail rheograms for Non-Newtonian fluid behaviour. **(08)**

Q.8 Write notes on any **THREE:** **(15)**

a) Thixotropy and methods to determine the same.
b) Bonding in tablets
c) Factors affecting flow of powders
d) Polymorphism

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PURUS – IV (2011 COURSE) : WINTER - 2016

SUBJECT: DOSAGE FORM DESIGN – I

Day: Saturday
Date: 19/11/2016

Time: 02.00 PM TO 05.00 PM
Max Marks. 80

N.B.

1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Out of the remaining attempt **TWO** questions from each section
2) Figures to the right indicate **FULL** marks
3) Both the section should be written in **SEPARATE** answer book.
4) Neat diagram must be drawn **WHEREVER** necessary

SECTION – I

Q. 1 Solve any **FIVE** **(10)**

a) Define viscosity. Explain how determination of viscosity is important in formulation of solutions.

b) Define dosage form and give its importance.

c) Give the pharmaceutical applications of suspensions.

d) Explain why preservatives are not required in simple syrup I.P.

e) Describe antioxidants used in oral liquids.

f) Explain in short solutions for body cavities with one example.

Q.2 a) What are solutions? Explain methods of preparation and factor affecting solutions. **(10)**

b) Explain in brief additives used in solutions for internal use. **(05)**

Q.3 a) Discuss types of suspensions. Describe formulation of suspensions. Add note on physical stability of suspensions **(08)**

b) Discuss in detail concept of physicochemical properties of drug involved in preformulation. **(07)**

Q.4 Write short notes (Any **THREE**) **(15)**

a) Buffers in oral liquids

b) Manufacturing and equipment for suspension

c) Controlled flocculation in suspensions

d) Microbial contamination in liquid orals

SUBJECT: DOSAGE FORM DESIGN – I

Day: Saturday
Date: 19/11/2016

Time: 02.00 PM TO 05.00 PM
Max Marks. 80

N.B.

1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Out of the remaining attempt **TWO** questions from each section
2) Figures to the right indicate **FULL** marks
3) Both the section should be written in **SEPARATE** answer book.
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SECTION – I

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b) Discuss in detail concept of physicochemical properties of drug involved in preformulation. **(07)**

Q.4 Write short notes (Any **THREE**) **(15)**

a) Buffers in oral liquids

b) Manufacturing and equipment for suspension

c) Controlled flocculation in suspensions

d) Microbial contamination in liquid orals

SECTION - II

Q. 5 Solve any **FIVE** **(10)**

a) What is need for dry suspension preparation? Give one example.

b) What are IPQC tests in emulsion preparation

c) What are different protein structures?

d) Give example of two protein based drugs.

e) What is difference between suppository and pessaries

f) Enlist factors involved in selection of suppository bases.

Q.6 a) Define suppository. Describe in detail choice of drug and excipient used in suppositories. **(10)**

b) Discuss drug suitability for dry syrups and elaborate manufacturing considerations in dry syrups. **(05)**

Q.7 a) Discuss physical and chemical stability of proteins and write about its stabilization. **(08)**

b) Discuss factors affecting preservation of emulsion. Give two commercial examples of emulsions. **(07)**

Q.8 Write short notes (Any **THREE**) **(15)**

a) QC of emulsions

b) Evaluation of suppositories

c) Electrical factors in emulsion stability

d) Ideal requirements of suppositories

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PURUS – IV (2011 COURSE): WINTER - 2016
SUBJECT : PHARMACEUTICAL MICROBIOLOGY (including Immunology) - II

Day : Tuesday
Date : 22/11/2016

Time : 02.00 PM TO 05.00 PM
Max. Marks : 80

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in **SEPARATE** answer books.
3) Draw neat and labeled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 Answer **ANY FIVE** of the following: **[10]**

a) What are probiotics?
b) Which test microorganisms are used in the assay of Streptomycin and Vitamin B_{12}?
c) Draw a neat, labeled diagram of Tray Fermentor.
d) How will you detect *E.coli* contamination in pharmaceuticals?
e) What are secondary metabolites?
f) Give importance of antifoam agents in fermentation.

Q.2 Answer the following: **[15]**

a) Which factors influence microbial spoilage of pharmaceuticals?
b) Enlist ideal characteristics of fermentation media.
c) Explain primary screening of industrially important microorganisms.

Q.3 a) Discuss assay of antibiotics by turbidometric method. **[08]**
b) Explain in brief down stream processing. **[07]**

Q.4 Write short notes on **ANY THREE** of the following: **[15]**

a) Challenge Test
b) Biological Waste Treatment
c) MIC
d) Industrial Microbiology

SECTION – II

Q.5 Answer **ANY FIVE** of the following: **[10]**

a) What are exotoxins?
b) Skin is external defence barrier. Justify.
c) Give role of adjuvants.
d) Classify various antigen – antibody reactions.
e) How vaccines are preserved?
f) Compare between Cellular and Humoral Mediated Immunity.

Q.6 Discuss the structure of Immunoglobulins and their various types in details. **[15]**

Q.7 a) Describe Type – II hypersensitivity reactions with examples. **[08]**
b) Give a detailed account on 'Viral Vaccines'. **[07]**

Q.8 Write short notes on **ANY THREE** of the following: **[15]**

a) Mixed Vaccine
b) Monoclonal Antibodies
c) Phagocytosis
d) ELISA

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PURUS – IV: (2011 COURSE): | WINTER - 2016 |
SUBJECT: PHARMACOLOGY - I

Day: Thursday
Date: 24/11/2016

Time: 02.00 PM TO 05.00 PM
Max. Marks: 80

N.B.;

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**. Out of the remaining solve any **TWO** questions from each section.
2) Both the sections should be written in **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.
4) Draw neat labeled diagram wherever necessary.

SECTION – I

Q.1 Answer **ANY FIVE** of the following: **(10)**

a) Define drug dependence.
b) Enlist the routes of excretion.
c) Define pharmacodynamics.
d) Define Clearance.
e) Define therapeutic index.
f) Define antagonism.
g) Define half-life.

Q.2 a) Define metabolism of drugs. Explain in detail the drug metabolism in human body. **(08)**

b) Explain the interaction of enzyme inducers and enzyme inhibitors in metabolism of drugs. **(07)**

Q.3 a) Define drug-drug interaction. Explain in detail drug interactions during absorption. **(08)**

b) Explain in detail the mechanism of drug-action. **(07)**

Q.4 Write short notes on **ANY THREE** of the following: **(15)**

a) Sources of drugs
b) Blood brain barrier
c) Antagonism
d) Tolerance

SECTION - II

Q.5 Answer **ANY FIVE** of the following: **(10)**

a) Write the tissue distribution of nicotinic receptors.
b) Write the therapeutic classification of sympathomimetic drugs.
c) Explain the term cycloplegia.
d) Discuss about neurotransmitter of autonomic nervous system.
e) Classify drugs acting on autonomic ganglia.
f) Write the therapeutic uses and adverse effects of β - blockers.
g) Discuss the effect of adrenaline on α-receptors in different tissues.

Q.6 a) Write the classification parasympatholytics. Discuss the pharmacological actions, adverse drug reactions, and therapeutic uses of atropine. **(08)**

b) Classify anti-cholinesterases. Discuss mechanism and pharmacological actions of anti-cholinesterases. **(07)**

Q.7 a) Classify α-adrenergic blockers. Discuss the pharmacological actions and therapeutic uses of ergot alkaloids. **(08)**

b) Name the cardiac stimulants and explain their pharmacological actions, adverse effects, and therapeutic uses. **(07)**

Q.8 Write a notes on **ANY THREE** of the following: **(15)**

a) Synthesis, storage, and metabolism of noradrenaline
b) Neuromuscular blockers