PURUS-I (SEMESTER PATTERN): APRIL/MAY: 2011
SUBJECT: PHARMACEUTICAL CHEMISTRY-II (ORGANIC)

Day: Saturday
Date: 23.04.2011

Time: 10.00 A.M. To 1.00 P.M.
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) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer books.

SECTION I

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

a) How benzynes are generated?
b) What is Homolytic and Heterolytic Bond Fission?
c) Arrange the following groups in order of increasing + I effect.
- CH_3 , - $CH(CH_3)_2$, -$C(CH_3)_3$
d) Classify the following as electrophiles and / or nucleophiles.

$(CH_3)_3C^{\oplus}$, $^{\ominus}CH_3$, BF_3 , $AlCl_4^{\ominus}$

e) Explain - Fluoroacetic acid is stronger than bromoacetic acid.
f) Define atomic orbital. What is quantum number?

Q.2 a) Give rules of resonance. Also explain rules for contributing resonance structures. **[15]**

Q.3 a) What is inductive effect? Discuss applications of inductive effects. **[10]**

b) Explain tautomerism with suitable examples. **[05]**

Q.4 Write short notes on (**ANY THREE**): **[15]**

a) Hyperconjugation
b) SNi reactions
c) Hydrogen bonds
d) Optical Isomerism

P. T. O.

SECTION II

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

a) Account for the following facts-
i) Ethanol (MW 45) boils at 78^0 C whereas ethylamine (MW 46) has b.p. of 17^0 C.
ii) Aniline is a weaker base as compared to primary amines.

b) Arrange the following compounds in order of increasing acidity

c) Explain how $\overset{\oplus}{N}O_2$ electorophile is generated in the nitrating mixture of cone. H_2SO_4 and conc. HNO_3.

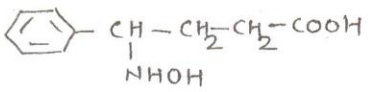
d) Define the terms- dextro, levo compounds with example of each.

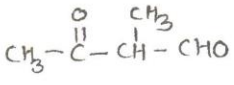
e) Write the general structures of acid chlorides, anhydrides, amides and esters.

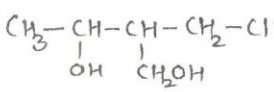
f) Define geometrical isomerism with suitable examples.

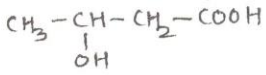
Q.6 **a)** What are SN_1 reactions? Discuss their mechanism, kinetics, stereochemistry and factors affecting them. **[10]**

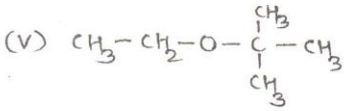
b) Write the IUPAC name of the following compounds **(ANY FIVE):** **[05]**

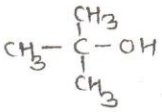
(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

Q.7 Enlist different reaction intermediates and explain any four of them in detail. **[15]**

Q.8 Write short notes on**(ANY THREE):** **[15]**

a) Friedel-craft reaction
b) Hybridizsation
c) Nucleophilic substitution at aryl compounds
d) Steric effects

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PURUS- I (SEMESTER PATTERN): APRIL/ MAY- 2011
SUBJECT: PHARMACEUTICAL CHEMISTRY- I (INORGANIC)

Day: Thursday
Date: 21-04-2011

Time: 10:00 A.M. To 1:00 P.M.
Max. Marks: 80

N.B:

1) **Q. 1** and **Q. 5** are **COMPULSORY**. Solve **ANY TWO** questions from each section.
2) Answer to both the section should be written in **SEPARATE** answer book.
3) Figures to the right indicate **FULL** marks.

SECTION-I

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

a) State the use of barium chloride and alcohol in limit test for sulphate.
b) Explain the terms: i) Assay ii) Official compound
c) Discuss the important functions of chloride and bicarbonate ion in the body.
d) What is the source and biological importance of iron?
e) Define the terms: i) Electrolytes ii) Non- electrolytes
f) How to observe the color intensity in iron limit test?

Q.2 **a)** Describe the principle, reaction and role of each reagent used in arsenic limit test. **(08)**
b) Discuss in detail electrolyte replacement therapy. **(07)**

Q.3 Describe the method of preparation, properties, uses and assay of Sodium acetate, Ferrous Sulphate, Sodium bicarbonate. **(15)**

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

a) Limit test for chloride
b) Inadequate storage conditions as a source of impurity
c) Hyponatremia and Hypernatremia
d) Biochemical role and deficiency symptoms of Iodine

SECTION-II

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

a) Give actions and uses of Sodium Hypochlorite Solution.
b) Give properties of an ideal antimicrobial agent.
c) Differentiate between Antiseptic and Disinfectant with suitable example.
d) Describe evaluation of antacid activity.
e) Write units of radioactivity.
f) What is talc chemically? Give its uses.

Q.6 **a)** What are expectorants and emetics? Explain in detail classification and mode of action of expectorants. **(07)**
b) Define antacid. Describe in detail ideal properties and classification of antacids. **(08)**

Q.7 Give the reaction, principle and assay of the following compounds. **(15)**
(Any Three)

i) Calcium carbonate ii) Hydrogen peroxide
iii) Boric acid iv) Magnesium Sulphate

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

a) Radiation Dosimetry OR Therapeutic application of radioisotopes

2011,

PURUS-I : APRIL/ MAY (SEMESTER PATTERN)
SUBJECT : HUMAN ANATOMY AND PHYSIOLOGY-I

Day : Friday
Date : 29.04.2011

Time : 10.00 A.M. To 1.00 P.M.
Max. Marks : 80.

N.B.:

1) Q. No. 1 and Q. No. 5 are **COMPULSORY.** Out of the remaining solve any **TWO** questions each from Section-I and Section-II.
2) Answers to the two sections should be written in **SEPARATE** answer books.
3) Draw neat labeled diagrams **WHEREVER** necessary.
4) Figures to the **RIGHT** indicate full marks.

SECTION-I

Q.1 Define the following terms (Any **Five**) **(10)**

a)	Metabolism	b)	Meiosis
c)	Homeostasis	d)	Phagocytosis
e)	Anatomy	f)	Plasma.

Q.2 **a)** Write a note on Blood clotting. **(08)**
b) Differentiate between smooth muscle and skeletal muscle. **(07)**

Q.3 **a)** Explain the mechanism of respiration. **(08)**
b) Explain the process of Antigen antibody reaction. **(07)**

Q.4 Write short notes on any **THREE** of the following: **(15)**
a) Spleen
b) Connective tissue
c) Lysosomes
d) Anemia.

SECTION-II

Q.5 Define the following terms (Any **Five**) **(10)**

a)	Angina pectoris	b)	Hepatitis
c)	Inflammation	d)	Pneumonia
e)	External respiration	f)	Gastritis.

Q.6 **a)** Explain the internal structure of Heart. **(08)**
b) Explain the process of Protein Digestion. **(07)**

Q.7 **a)** Explain the anatomy and physiology of stomach. **(08)**
b) Explain the anatomy and physiology and lung. **(07)**

Q.8 Write short notes on any **THREE** of the following: **(15)**
a) Mitochondria
b) Portal circulation
c) Salivary glands
d) Heart sounds

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PURUS – I (SEMESTER PATTERN): APRIL / MAY - 2011
SUBJECT: MODERN DISPENSING PRACTICE

Day : Wednesday
Date : 27.04.2011
Time: 10.00 A.M. To 1.00 P.M.
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 section 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) Define the term Pharmacopoeia. Give its importance.
b) What are requirements of patient counseling process?
c) Mention the steps involved in compounding of medicine.
d) What is the significance of Latin terms in prescription?
e) Mention the labeling conditions for eye drops and suppositories.
f) Give the difference between Elixirs and Syrups.
g) What do you mean by Child resistant container and Tamper evident container?

Q.2 a) Discuss in detail Good Compounding and Dispensing Practices. **[10]**
b) Discuss various parts of prescription. **[05]**

Q.3 a) Comment on selection of container and labeling of dispensed products. **[08]**
b) What are different types of prescriptions? What are the errors in prescription writing? **[07]**

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

a) United States Pharmacopoeia
b) Mouthwashes and Gargles
c) History of Pharmacy in India
d) Pictograms

SECTION – II

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

a) Give the limitations of suppositories.
b) What are gels? Give the types of gels.
c) Differentiate between diffusible and indiffusible suspensions.
d) Give the principle of effervescent granules.
e) What are eutectic mixtures?
f) Mention the advantages and disadvantages of granules as dosage form.
g) What is the percentage strength (w/v) of solution of benzoic acid, if 70ml contains 8 gm?

Q.6 a) Define Emulsion. How formation of emulsion occurs? Comment on compounding of emulsions. **[10]**
b) Mention the various formulae used to calculate child's dose. **[05]**

Q.7 a) Discuss in detail compounding of ointments. **[08]**
b) Discuss in detail compounding of suppositories. **[07]**

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

a) Therapeutic Incompatibility
b) Compounding of suspensions
c) Sustained release tablets
d) Dusting powders

PURUS – I (SEMESTER PATTERN): APRIL / MAY- 2011
SUBJECT: PHARMACEUTICAL STATISTICS

Day : Monday
Date : 02-05-2011

Time: 10.00 A.M. To 1.00 P.M.
Max. Marks: 80.

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of remaining 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 Attempt **ANY FIVE** of the following: **[10]**

a) Define mode and median.
b) IF $n=10, \sum x=20, \sum x^2=200$. Find coefficient of variation (CV).
c) Define classical definition of probability.
d) In a box there are 5 Aspirin, 6 Analgin and 10 Paracetamol tablets. If one tablet is chosen at random, find the probability that it is Aspirin.
e) State the applications of binomial distribution.
f) Calculate mean deviation from median for the following data:
4, 6, 8, 12, 15.

Q.2 From the following data fit the two lines of regression: **[15]**

X	16	20	17	21	15
Y	50	60	58	60	55

Also: **a)** Estimate value of Y when X = 25.
b) Estimate value of X when Y = 50.
c) Find correlation coefficient between X and Y.

Q.3 a) Find mean, standard deviation and coefficient of variation from the following data: **[10]**

Monthly rent (Rs.)	20 – 40	40 – 60	60 – 80	80 – 100	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200
No. of families	6	9	11	14	20	15	10	8	7

b) For the following data draw histogram and frequency curve. **[05]**

Class	20 – 40	40 – 60	60 – 80	80 – 100	100 – 120	120 – 140
Frequency	8	15	23	18	9	4

Q.4 Write a short note on the following terms: **[15]**

a) Non-parametric test.
b) Discuss the procedure for t-test.
c) Cumulative frequency distribution.

P.T.O.

SECTION – II

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

a) State the test statistic for testing $H_0 : \mu_1 = \mu_2$, for large sample.

b) Define level of significance.

c) Discuss assignable cause of variation in statistical quality control.

d) State any two applications of normal distribution.

e) If $P(A) = 0.4$, $P(B) = 0.3$ *and* $P(A \cap B) = 0.1$, find $P(A \cup B)$.

f) Discuss sign test for symmetry.

Q.6 **a)** What are the advantages of sampling over census? Explain different types of sampling. **[08]**

b) A certain machine is supposed to produce red, yellow and green candy wrappers in the ratio 4:3:2. In a sample of 90 wrappers produce by the machine, 31 were red, 38 were yellow and 21 green. Is the machine working properly? Use $\alpha = 0.05$. **[07]**

Q.7 **a)** Write a short note on producer's risk and consumer's risk. **[08]**

b) Fill in the blanks in the following analysis of variance table of the Latin Square Design. **[07]**

Source of Variation	d. f.	Sum of squares	Mean sum of square	F – Value
Rows	5	-----	-----	3
Columns	----	4.2	-----	-----
Treatments	----	----	2.43	-----
Error	----	----	0.65	-----
Total	**35**	**39.65**	-----	

Q.8 A set of data involving four "tropical feed stuffs A, B, C and D" tried on 20 chicks is given below. All the twenty chicks are treated alike in all respects except the feeding treatments and each feeding treatment is given to 5 chicks. Analyse the data. **[15]**

Weight gain of baby chicks fed on different feeding materials composed tropical feed stuff.

						Total
A	55	49	42	21	52	219
B	61	112	30	89	63	355
C	42	97	81	95	92	407
D	169	137	169	85	154	714
Total						**1695**

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PURUS - III (Semester Pattern): APRIL / MAY - 2011
SUBJECT: PHARMACEUTICAL ENGINEERING - I

Day : Wednesday
Date : 27-04-2011

Time: 2.00 P.M. To 5.00 P.M.
Max. Marks: 80

N. B.:

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

SECTION - I

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

i) Write significance of Reynolds number.
ii) Give an account of losses in fluid flow.
iii) What are the importances of filter aids?
iv) Explain mass transfer in laminar flow.
v) Explain inclined manometer.
vi) Explain molecular diffusion in gases.
vii) Explain the concept of reverse osmosis.

Q. 2 a) Explain Bernoulli's theorem for flow of fluids with correction factors involved in it. **(10)**

b) Describe the principle, construction working and application of plate and frame filter press. **(05)**

Q. 3 a) Explain principle, construction, working of pressure differential flow meter. **(08)**

b) Give the principle, construction and working of any two continuous absolute extractors. **(07)**

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

a) Rotary vacuum filter
b) Rotameter
c) Rotocell extractor
d) HEPA filter

P. T. O.

SECTION - II

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

i) Explain significance and factors affecting size reduction.
ii) Explain powder mixing and factors affecting powder mixing.
iii) Explain the process of impact and attrition.
iv) What are the various laws used to determine energy requirement for size reduction process.
v) How sizes of powder are graded? Give classification as per Indian Pharmacopoeia.
vi) Explain types of impellers used for mixing.
vii) Explain the working of jet mixer.

Q.6 a) Describe in detail construction, working and applications of fluid energy mill. **(10)**
b) Discuss the mechanism of liquid mixing, add note on baffles. **(05)**

Q. 7 a) Discuss any two methods of size separation. **(08)**
b) Explain construction working and applications of ball mill. **(07)**

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

a) Sigma blender
b) Edge and end runner mill
c) Colloid mill
d) Pressure Homogeniser

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