PURUS - I (2011 COURSE): APRIL / MAY - 2014
SUBJECT: HUMAN ANATOMY AND PHYSIOLOGY -I

Day: Monday
Date: 05-05-2014

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 book.
4) Draw neat diagrams **WHEREVER** necessary.

SECTION-I

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

a) Define anemia.

b) Define Hematopoiesis

c) Name the sites where ciliated epithelium if found

d) Define hemophilia

e) Enlist the functions of mitochondria

f) Enlist the organs of thoracic cavity

g) Define homeostasis

Q.2 **a)** Explain in detail the fate of RBC. **(08)**

b) Explain in detail the factors regulating blood pressure. **(07)**

Q.3 **a)** Explain the anatomy of heart. **(08)**

b) Classify epithelial tissue. Explain in detail transitional epithelium. **(07)**

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

a) Cell

b) ECG

c) Importance of Rh factor

d) Pulmonary Circulation

P. T. O.

SECTION-II

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

a) Write composition of lymph and name main two lymphatic ducts .

b) Define and give normal values of vital capacity and tidal volume.

c) Give the functions of saliva

d) Write functions of lymph

e) Mention the digestion of protein.

f) Draw labeled diagram of digestive system.

g) Define inspiration and expiration.

Q.6 a) Describe the physiology of respiration. **(08)**

b) Mention the phases of gastric secretion. **(07)**

Q.7 a) Explain the anatomy and physiology small intestine **(08)**

b) Describe the functions of liver. **(07)**

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

a) Spleen

b) Large intestine

c) Methods of artificial respiration

d) Pancreas

* * * * *

(Sem Pattern)

PURUS - I: APRIL / MAY 2014

SUBJECT : PHARMACEUTICAL CHEMISTRY - II (ORGANIC)

Day : Sunday
Date : 27-04-2014

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 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]**

a) What is quantum number according to wave mechanical theory?

b) What is bond dissociation energy?

c) Define optical isomerism.

d) What is plane of plane polarized light?

e) Explain shapes of atomic orbitals.

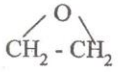
f) What is polarity of bonds?

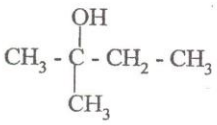
Q.2 **a)** Differentiate between SN^1 and SN^2 reaction. **[08]**

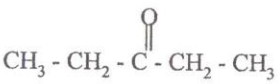
b) Explain orientation in monosubstituted benzene. **[07]**

Q.3 **a)** Define resonance. How resonating structures are written? **[10]**

b) Give IUPAC names for the following compounds **(ANY FIVE)**: **[05]**

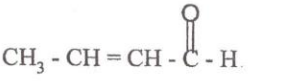
i) 

ii) 

iii) 

iv) $Cl - CH_2 - CH_2 - OH$

v) $CH_3 - CH = N - OH$

vi) 

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

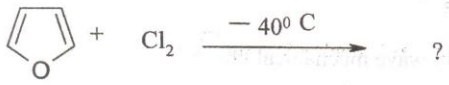
a) Melting point
b) Structural isomerism
c) Collision theory
d) Factors affecting SN^1 reaction rate

SECTION - II

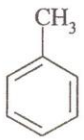
Q.5 Attempt **ANY FIVE** of the following: **[10]**

a) Enlist different sulphonating reagents.

b) Predict the product



c) Write hyperconjugation structures for the following structure.



d) Methylamine is more basic than ammonia. Explain.

e) What is sacrificial hyperconjugation?

f) What is heterocyclic cleavage?

Q.6 Define and enlist reaction intermediate. Explain carbon radicals, σ - complex, and nitrenes in detail. **[15]**

Q.7 a) What is Friedel craft alkylation and acylation reaction? **[08]**

b) Explain the order of stability in following: **[07]**

$(CH_3)_3 \overset{\oplus}{C} > (CH_3)_2 \overset{\oplus}{C}H > CH_3\overset{\oplus}{C}H_2 > \overset{\oplus}{C}H_3$

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

a) Inductive effect
b) Steric strain
c) Sulphonation reaction
d) Benzyne

* * * *

PURUS - I (2011 COURSE): APRIL / MAY - 2014
SUBJECT: PHARMACEUTICAL CHEMISTRY - I (INORGANIC)

Day: Tuesday
Date: 22-04-2014

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.
4) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION-I

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

a) Define monograph and purity.

b) Why limit test for heavy metals is performed? How to observe the colour intensity?

c) What do you mean by metabolic acidosis and metabolic alkalosis?

d) State the reason for use of alcohol and potassium sulphate in the sulphate limit test.

e) Give preparation and properties of Potassium chloride.

f) Give conditions for each causing Hypokalemia and Hyperkalemia.

Q.2 **a)** Comment on sodium and chloride as a major extra cellular fluid ions. **(08)**

b) Add a note on inadequate storage as a source of impurity. **(07)**

Q.3 **a)** Discuss in detail limit test for Iron. **(08)**

b) Explain in detail acidifying agent with suitable examples. **(07)**

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

a) Limit test for Arsenic

b) Electrolyte combination therapy

c) Respiratory acidosis and alkalosis

d) Contents of official monograph

P. T. O.

SECTION-II

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

a) Give ideal properties of protectives.

b) Give uses of sodium phosphate.

c) What are Bulk purgatives and stimulants?

d) Describe uses and mechanism of action of bismuth compounds.

e) What is anemia? How it is treated?

f) Write assay of Sodium bicarbonate.

Q.6 **a)** Write a note on 'Rationalized antacid therapy' their uses with suitable examples. **(08)**

b) What are protectives and adsorbents? Give their uses with suitable examples. **(07)**

Q.7 **a)** Give a detailed account on Iodine as essential and trace elements and compounds used in iodine deficiency. **(08)**

b) Describe Cathartics in detail. **(07)**

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

a) Iron sorbite injection

b) Assay of Calcium carbonate

c) Assay of Ferrous sulphate

d) Iron absorption and utilization

* * * * *

PURUS - I (2011 COURSE): APRIL / MAY - 2014
SUBJECT: PHARMACEUTICAL STATSTICS

Day: Wednesday
Date: 07-05-2014

Time: 10:00 AM-TO 1:00 P.M.
Max. Marks: 80

N.B.:

1) **Q. No 1 and Q. No. 5 are COMPULSORY**. Out of the remaining 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.
4) Use of the non programmable Electronic pocket **CALCULATOR** is permissible.
5) The **graph papers** and the **statistical tables** will be supplied at the examination centre.

SECTION-I

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

a) Find the Median and S.D. for the following:
23, 15, 17, 21, 11, 16, 12, 11.

b) Define Median.

c) If the probability that 'A' will happen is 0.4. What is the probability that 'A' will not happen?

d) Define statistics.

e) If for the Normal Distribution $x = 110, \mu = 105$ and $\delta = 5$ then $Z = ...?$

f) If two coins are tossed what is the probability of getting one 'Head' and one 'Tail'.

Q.2 a) Draw the Ogive curves for the following data and find the approximate value of the median using the graph. **(08)**

Blood Serum Cholesterol Level	240-245	245-250	250-255	255-260	260-265
No. of Patient	25	35	50	35	25

b) Compute the Median for the following data: **(07)**

Age of Patient	30-40	40-50	50-60	60-70	70-80
No. of Patients	11	25	37	18	7

Q.3 a) The pulse rate of the healthy male follows normal distribution with the mean of 75 per min and S.D of 4 per min. Find the probability that randomly selected healthy man will have the pulse rate below 79. **(08)**

b) If 3% of the articles in the production are of C grade, then if 5 articles are checked on random what is the probability that: **(07)**
i) None is defective ii) Max. of 1 are defective?

Q.4 a) Following are the values of Import and Export. **(08)**

Export	10	11	14	14	20	22	16	12
Import	12	14	15	16	21	26	21	15

Compute the Karl Pearson's correlation coefficient.

P.T.O.

b) Compute the Spearman's Rank correlation coefficient between the marks given by two judges A and B. **(07)**

Marks by A-	81	72	60	33	29	11	56	42
Marks by B-	75	56	42	15	30	26	60	80

SECTION-II

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

a) Differentiate between the continuous variable and discrete variable.
b) Type II Error is 'fatal' Evaluate.
c) Explain the term 'Hypothesis'.
d) What are the different Levels of significance - (L. O. S) used in the practice?
e) Why Randomized Block Design is needed?
f) Explain the term optimization.

Q.6 a) As per the theory the mean count of Neutrophils in blood for the healthy individuals is 60% with the S. D of 15%. When 100 healthy individuals were tested at random it showed a mean of 80% would you say that the theory is proved correct? (Use 5% LOS). **(08)**

b) The attack rate among the vaccinated and not vaccinated against measles are given in the following table: **(07)**

	Result		
Group	Attacked	Not Attacked	Total
Vaccinated	10	90	100
Not Vaccinated	26	74	100
Total	36	164	

Test at 5% LOS the effectiveness of the Vaccination.

Q.7 a) Following is the average body temperature in ^{0}F for the healthy individuals i Asia and Africa. **(08)**

	Body Temperature in ^{0}F					
Asia	98	98.3	97.5	98.2	97.9	99.0
Africa	98.5	98.6	98.1	98.1	98.2	98.4

Using the 'Sign Test', test whether there is any significant difference in the body temperature of healthy individuals from Asia and Africa (Use 5% LOS).

b) Following is average no. of accidents occurring on the days of the week in a manufacturing Unit. **(07)**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6	9	10	11	5	3	2

Is the accidents spread is uniform over the week? (Use 5% LOS).

Q.8 a) What do you understand by the term Experimental Design? Why the designing of a experiment is important? Name any two such designs. **(08)**

PURUS-I (2011 COURSE): APRIL/ MAY- 2014
SUBJECT: PHARMACEUTICAL ENGINEERING-I

Day: Friday
Date: 02-05-2014

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 attempt 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.

SECTION-I

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

a) What is Reynold's number?
b) Enlist various mechanisms on which equipments for size reduction are based.
c) Which factors affect screening?
d) What is fluid statics and fluid dynamics?
e) How is pressure measured? Give equipments used to measured pressure.
f) Give advantages and limitations of Pitot tube.

Q.2 **a)** Derive an equation for Bernoulli's theorem. **(07)**
b) Give various equipments used in the size separation and explain cyclone separator in detail. **(08)**

Q.3 **a)** Give significance of size reduction in pharmacy and explain working of fluid energy mill. **(07)**
b) What is screening? Explain effectiveness of screens. Give working of Mogensen sizer. **(08)**

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

a) Bourdon's guage
b) Edge and end Runner Mill
c) Fluid flow through packed bed
d) Laws governing energy requirements for size reduction
e) Energy losses in fluid flow

SECTION-II

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

a) Give mechanisms of liquid mixing.
b) Why is carbondioxide used in supercritical fluid extractions?
c) What is ultrafiltration?
d) How is filter aid used?
e) Give ideal properties of filter medium.
f) How will you minimize aeration during mixing?

Q.6 **a)** Explain mechanism of filtration. Explain working of Rotary drum filter. **(07)**
b) Explain mechanism of solid mixing and give construction of ribbon blender. **(08)**

Q.7 **a)** Give construction and working of Robert diffusion battery. **(07)**
b) Give significance of triangular diagrams in solid liquid extraction. **(08)**

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

a) Planetary mixer
b) Rotocel extractor
c) Basket extractor

PURUS – I (2011 COURSE): APRIL/MAY – 2014
SUBJECT: MODERN DISPENSING PRACTICE

Day: Tuesday
Date: 29-04-2014

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) Answer to both the sections should be written in the **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION - I

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

a) Enlist the causes of chemical incompatibility.
b) Explain the ideal features of containers.
c) Define and enlist the importance of pictograms.
d) Define the term proof spirit and give its significance.
e) Define the following terms:
   i) Displacement value ii) Isotonic solutions
f) Importance of Refill instructions with example.
g) Calculate the quantity of sodium chloride required for 800ml of 0.9% w/v solution.

Q.2 a) Explain the various types of Medication errors. **(08)**
b) Define and classify the incompatibility. Explain the chemical incompatibility. **(07)**

Q.3 a) Define and explain various parts of prescriptions. **(08)**
b) Explain fundamentals operations carried out in compounding. **(07)**

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

a) Ideal Handling method of prescription
b) Note of physical incompatibility
c) Factors affecting the calculation of dose
d) Developmental changes in Indian pharmacopoeia

SECTION - II

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

a) Write the labeling instructions for mouthwash and liniments.
b) Give the examples and role of preservatives and Antioxidants in solutions.
c) Define and classify the suppositories.
d) What do you mean by Geometrical dilution? Give its significance.
e) Enlist the advantages of Granules over powder.
f) Write the labeling instructions for throat points and suppositories.
g) Enlist the identification tests for emulsion.

Q.6 a) Define and classify the emulsifying agents. Explain the cracking of emulsion. **(08)**
b) Define and classify various types of solutions. Write in detail about compounding and dispensing aspects of Gargles. **(07)**

Q.7 a) Describe in detail the compounding aspect of effervescent granules **(08)**
b) Explain in detail the methods of preparation of suppository. **(07)**

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

a) Formulation aspects of solution
b) Compounding methods of emulsions
c) Types of suspending agents