

PURUS - I : APRIL / MAY - 2010 (Semester-Pattern)
SUBJECT: PHARMACEUTICAL CHEMISTRY - I (Inorganic)

Day: **Monday**
Date: **03-05-2010**

Time: **10:00 AM TO 1:00 PM.**
Max. Marks: 80

N.B.:

- 1) **Q. No. 1 and 5 are COMPULSORY.** Solve any **TWO** questions from each section.
- 2) Answer to both the Sections 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 meaning of the term impurities as applicable to drug.
 - b) Explain the term category with their significance in the official monograph.
 - c) How iron poisoning can be treated?
 - d) Give two conditions for each causing hyponatremia and hypernatremia.
 - e) Why limit test for heavy metals is performed and how to observe the colour intensity?
 - f) List out the conditions that are responsible for anemia.
- Q.2** a) Explain in detail the biochemical role of iron. Also write about various proteins associated with iron. (08)
- b) Write a note on Oral rehydration solution. (ORS). (07)
- Q.3** Give preparation, properties and uses of any **THREE** of the following: (15)
- | | |
|-----------------------|---------------------|
| a) Potassium chloride | b) Sodium iodide |
| c) Calcium chloride | d) Ferrous sulphate |
- Q.4** Write notes on (any **THREE**) (15)
- a) Assay of sodium chloride and potassium iodide.
 - b) Limit test for iron.
 - c) Electrolyte combination therapy.
 - d) Source and physiological role of sulphur.

P. T. O.

SECTION-II

- Q.5** Attempt any **FIVE** of the following: **(10)**
- a) What is meant by half life of radio element? State various units of Radioactivity.
 - b) What is achlorhydria? Write treatment for the same.
 - c) Define protective and adsorbent.
 - d) Write definition and two examples of saline cathartics.
 - e) Write principle and equation for assay of potassium permanganate.
 - f) Define bactericidal and bacteriostatic?
- Q.6** a) Discuss in detail Aluminium containing antacids. **(08)**
- b) Give definition, classification and mechanism of action of topical agents. **(07)**
- Q.7** a) Describe properties, assay and uses of boric acid and zinc sulfate. **(08)**
- b) Write mechanism of magnesium containing antacids. Explain method of preparation and assay of milk of magnesia. **(07)**
- Q.8** Write notes on (any **THREE**) **(15)**
- a) Emetics
 - b) Geiger Muller counter
 - c) Astringents
 - d) Combination of antacid preparation

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PURUS-I: APRIL/MAY-2010 (Semester Pattern).
SUBJECT: PHARMACEUTICAL CHEMISTRY-II (ORGANIC)

Day: Wednesday
Date: 05-05-2010

Time: 10:00AM-1:00PM
Max Marks: 80

N. B.

- 1) Q.1 and Q.5 are **COMPULSORY**. Attempt **ANY TWO** from Section-I and two questions from Section-II.
- 2) Answers to both sections must be written in **SEPARATE** answer books.
- 3) Figures to the **RIGHT** indicate full marks.

SECTION-I

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

- a) Arrange the following in the order of decreasing bond energy.
H-H, Cl-Cl, Br-Br, I-I
- b) Write the following in the increasing order of acid strength.
CCl₃COOH, HCOOH, CH₃COOH, CF₃COOH
- c) Which of the following structures exhibit cis-trans isomerism?
 - i) Ethanal oxime
 - ii) 3-Methyl -3-heptene
 - iii) Cyclohexane 1, 2 - diol
 - iv) 2-Methyl -2- butene
- d) Why Acetic acid is weaker acid than benzoic acid.
- e) Meso compounds are optically inactive. Give justification.
- f) Predict the product



Q.2 a) Define the following terms. (05)
i) Isomerism, ii) Tautomerism, iii) Metamerism,
iv) Stereoisomerism, v) Optical isomerism

b) Write a short note on Transition state theory and Collision theory. (10)

Q.3 a) Explain in detail orientation in monosubstituted benzenes. (08)

b) Give factors affecting rate of SN² reaction. (07)

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

- a) Carbanions
- b) Nitration Reactions
- c) Resonance
- d) Inductive effect

P. T. O.

SECTION-II

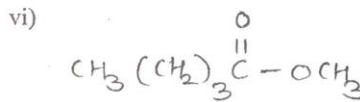
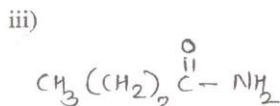
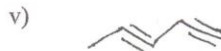
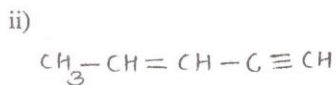
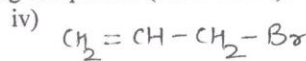
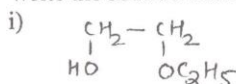
Q.5 Answer any FIVE of the following. (10)

- a) Separate the following species into electrophiles and nucleophiles
 OCH_3^- , H_3O^+ , NH_3 , SO_3 , SOCl_2 , Br^+ , RSH , RMgX
- b) Why t-butyl chloride reacts 8 times faster in methanol than in ethanol at 25°C ?
- c) Predict the reaction conditions in the following reaction.



- d) What are soft acids, soft bases, hard acids and hard bases?
- e) How nitrenes are generated?
- f) What product you would get when benzene is treated with cyclopropane?

Q.6 a) Write the IUPAC names of the following compounds (ANY FIVE): (05)



- b) What are reaction intermediates? Give reactions of following intermediates (10)
 (ANY TWO)
- i) Carbon radical
- ii) Carbenium ion
- iii) Carbenes

Q.7 What are Friedel-Craft reactions? (15)

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

- a) Hybridization
- b) SN^1 reaction
- c) Benzynes
- d) σ -Complex

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PURUS - I (SEMESTER PATTERN): APRIL / MAY 2010
SUBJECT: PHARMACEUTICAL STATISTICS

Day : Friday
Date : 14-05-2010

Time: 10:00 AM TO 1:00 PM
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) Find the median from the following data:
63, 64, 61, 62, 60, 68, 66.
 - b) Calculate the range and coefficient of range for the following data:
45, 12, 76, 42, 4, 50, 37, 48.
 - c) In the simultaneous tossing of two fair coins, find the probability of having at least one head.
 - d) Let X be Poisson variate with parameter m. If $P(X=2) = P(X=1)$, find m.
 - e) Define mean and mode.
 - f) Define coefficient of variation.

- Q.2** Calculate the mean, mode and median for the frequency distribution of marks of 100 candidates given below: [15]

Marks	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Frequency	5	12	32	40	11

Also determine mode graphically.

- Q.3** a) Compute correlation coefficient between supply and price of commodity using following data: [10]

Supply	152	158	169	182	160	166	182
Price	198	178	167	152	180	170	162

- b) For a certain bivariate data the two lines of regression are: [05]
 $5X - 6Y + 90 = 0$
and $15X - 8Y = 130$
Find means of X and Y and correlation coefficient between X and Y.

- Q.4** Write a short note on the following terms: [15]
- a) Sample space and event with illustrations
 - b) Properties of correlation coefficient
 - c) Methods of classification

P.T.O.

SECTION – II

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

- a) Define hypothesis.
- b) For a bivariate data we have $\bar{X}=53, \bar{Y}=28, b_{yx}=-1.5, b_{xy}=-0.2$.
Estimate of X for Y = 30.
- c) If A and B are independent with, $P(A)=0.5, P(B)=0.4$.
Find $P(A \cup B), P(A \cap B')$.
- d) Discuss the importance of randomization.
- e) What is Bernoulli trial?
- f) For the following probability mass function $P(x)$, what is the value of k.

$$P(x) = \begin{cases} kx, & x=1,2,3,4,5 \\ 0 & \text{otherwise} \end{cases}$$

Q.6 A company appoints four salesman A, B, C, D and observes their sales in three seasons summer, winter and monsoon. The figures (in lakhs) are given in the following table. Carry out analysis of variance. **[15]**

	Salesmen			
Season	A	B	C	D
Summer	56	56	41	55
Winter	48	49	50	54
Monsoon	46	50	51	53

Q.7 a) In a sample of 120 persons in a village, 76 persons were administered a new drug for preventing influenza out of whom 24 persons were attacked by influenza. Amongst those not administered the new drug 12 persons were not affected by influenza. Use Chi-Square test for finding out whether the new drug is effective? **[08]**

b) A random variable X has following probability function: **[07]**

X	-2	-1	0	1	2	3
P(X = x)	k	2k	3k	4k	9k	6k

- i) Find k.
- ii) Evaluate $P(X < 2), P(X \geq 2), P(-2 < X < 2)$

Q.8 a) Explain any two sampling methods. **[05]**

b) For a normal distribution given that mean 50 and variance 100. Find the value of X such that 13% of the area to its left. **[05]**

c) Write note on Latin Square Design. **[05]**

PURUS-I : APRIL/ MAY 2010 (SEMESTER PATTERN)
SUBJECT : HUMAN ANATOMY AND PHYSIOLOGY-I

Day : *wednesday*
Date : *12-05-2010*

Time : *10:00 AM-TO 1:00 PM.*
Max. Marks : 80.

N.B.:

- 1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Out of the remaining solve any **TWO** questions 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) Goblet cell | b) Homoeostasis |
| c) Congestive cardiac failure | d) Vital capacity |
| e) Clotting time | e) Physiology. |
- Q.2** a) Give an account of WBCs. (08)
b) Discuss about the conduction system of heart. (07)
- Q.3** a) Explain the process of Respiration. (08)
b) Explain the movement of materials across plasma membrane. (07)
- Q.4** Write short notes on any **THREE** of the following: (15)
- a) Spleen
 - b) Clinical importance of blood group
 - c) Nervous tissue
 - d) Endothelium

SECTION-II

- Q.5** Define the following terms (Any Five) (10)
- | | |
|-------------------------|-----------------|
| a) Hypertension | b) Pneumonia |
| c) Lymphoma | d) Tuberculosis |
| e) Internal respiration | f) Anemia. |
- Q.6** a) Explain the functions of Liver. (08)
b) Explain in detail the systemic circulation. (07)
- Q.7** a) Explain the process of Digestion of carbohydrates. (08)
b) Discuss about methods of artificial respiration. (07)
- Q.8** Write short notes on any **THREE** of the following: (15)
- a) Large intestine
 - b) Lymph node
 - c) Mitochondria
 - d) ECG.

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PURUS – I (SEMESTER PATTERN): APRIL / MAY 2010
SUBJECT: MODERN DISPENSING PRACTICE

Day : Friday
Date : 07-05-2010

Time: 10:00AM-TO 1:00PM.
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) What do you mean by tamper-evident and multidose containers?
 - b) What is the importance of Product Information Leaflets (PIL)?
 - c) Give the difference between Linctuses and elixirs.
 - d) What are different types of prescription?
 - e) What is role of talc in aromatic waters?
 - f) Give the systematic approach for compounding.
 - g) Mention the labeling conditions for Liniment and Enema.
- Q.2** a) What are syrups? Discuss the types, methods of preparation of syrups. Explain why syrups are self preservative? [10]
b) Comment on storage and stability of dispensed products. [05]
- Q.3** a) Elaborate different parts of prescription. Add a note on documentation of prescription. [08]
b) What are different resources for Good Compounding and Dispensing Practices? [07]
- Q.4** Write short notes on **ANY THREE** of the following: [15]
- a) Indian Pharmacopoeia
 - b) Aromatic Waters
 - c) Price Calculation for Prescription
 - d) Patient Counseling

SECTION – II

- Q.5** Answer **ANY FIVE** of the following: [10]
- a) Give the pharmaceutical applications of Emulsion.
 - b) Explain compounding of creams.
 - c) Give the Cowling's and Fried's formula for calculation of child dose.
 - d) Explain different methods adopted to mix powders.
 - e) Give the difference between flocculated and deflocculated suspensions.
 - f) Why Calibration and Lubrication of suppositories mould is required?
 - g) How many wine gallons of 20% (v/v) alcohol would be the equivalent of 20 proof gallons?
- Q.6** a) What are powders? Differentiate between divided and bulk powders. Add a note on compounding and packing of powders. [10]
b) Give the difference between ointments, creams and pastes. [05]
- Q.7** a) Discuss in detail formulation of suspension. [08]
b) Discuss various factors affecting calculation of dose. [07]
- Q.8** Write short notes on **ANY THREE** of the following: [15]
- a) Identification tests for type of emulsion
 - b) Effervescent granules
 - c) Physical incompatibility

PURUS – III (SEMESTER PATTERN): APRIL / MAY -2010
SUBJECT: PHARMACEUTICAL ENGINEERING - I

Day: Tuesday
Date: 11-05-2010

Time: 2:00 PM TO 5:00 PM
Max. Marks: 80

N.B.:

- 1) Q. No 1 and 5 are **COMPULSORY**. Attempt any **TWO** from the remaining **THREE** from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer book.

SECTION-I

- Q.1** Attempt **ANY FIVE** of the following: (10)
- a) Explain Fourier's law of heat transfer by conduction.
 - b) Give significance of Reynolds's number.
 - c) Explain in short freeze grinding.
 - d) Describe in brief elutriation.
 - e) Give difference between primary, secondary and final stage air filter.
 - f) Give advantages of flat plate heat exchangers.
 - g) Write in brief about various valves used to regulate flow of fluids.
- Q.2** a) What is mass transfer? Explain in details single phase mass transfer in turbulent and laminar flow. (10)
- b) State various laws to determine energy requirement of size reduction and explain Kick's law. (05)
- Q.3** a) Explain the principle of size separation by sedimentation and describe sedimentation tank. (08)
- b) Describe the construction and working of plate and frame filter press. (07)
- Q.4** Write short notes on **ANY THREE** of the following: (15)
- a) Edge runner and End runner mills
 - b) Pitot tube
 - c) Radiation heat transfer
 - d) Pulsation column extractor

SECTION-II

- Q.5** Attempt **ANY FIVE** of the following: (10)
- a) Enumerate various continuous absolute extractors.
 - b) Explain in brief 'Frictional losses in fluid flow'.
 - c) Draw a neat diagram of sieve bend.
 - d) Enlist solid liquid extraction equipments.
 - e) What do you mean by sieve number and sieve efficiency?
 - f) What is filter aid? Why filter aid should be used in optimum concentration?
 - g) Explain Fick's law of diffusion.
- Q.6** a) Explain Bernoulli's Theorem and give its application. (10)
- b) Explain orifice meters. (05)
- Q.7** a) Derive an expression for effectiveness of screens. What are factors affecting screening? (08)
- b) Explain Griffith's theory of size reduction. (07)
- Q.8** Write short notes on **ANY THREE** of the following: (15)
- a) Bag filters
 - b) Planetary mixers