

F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) : SUMMER  
- 2018

SUBJECT: HUMAN ANATOMY & PHYSIOLOGY - I

Day: **Thursday**  
Date: **03/05/2018**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 60

**S-2018-3907**

**N.B.:**

- 1) **Q. No. 1 and Q. No. 5** are **COMPULSORY**.
- 2) Attempt any **TWO** questions out of the remaining.
- 3) Figures to the right indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SEPARATE** answer books.
- 5) Draw neat labeled diagram wherever applicable.

**SECTION-I**

- Q.1** Answer any **FIVE** of the following: (10)
- a) Define the terms posterior, anterior.
  - b) Define the terms sagittal and Mid- sagittal plane.
  - c) Define the terms anatomy, physiology.
  - d) Name the organs of lymphatic system and their functions.
  - e) Explain the characteristics of epithelial tissues. Enlist their types.
  - f) Explain hypertension.
  - g) Explain the structure of artery.
- Q.2** a) Explain in detail the types of movement of materials across plasma membrane. (07)  
b) Explain homeostasis giving examples of positive and negative feedback mechanisms. (03)
- Q.3** Explain in detail the cardiac cycle. Add a note on heart sounds. (10)
- Q.4** Write short notes on any **TWO** of the following: (10)
- a) Cartilages
  - b) Lymph node
  - c) ECG

**SECTION-II**

- Q.5** Answer any **FIVE** of the following: (10)
- a) Define: i) Erythropoeisis ii) Bronchitis
  - b) Write the composition and functions of saliva.
  - c) Draw neat labeled diagram of respiratory system.
  - d) Classify WBC. Enlist their functions.
  - e) Explain the terms gastric ulcer and dysphagia.
  - f) What are the functions of platelets?
  - g) What are plasma proteins?
- Q.6** a) Explain the structure and functions of pancreas. Explain the role of pancreatic enzymes in digestion. (07)  
b) Explain the structure of lungs. (03)
- Q.7** Enlist the clotting factors. Discuss in detail the mechanism of blood clotting. (10)
- Q.8** Write short notes on any **TWO** of the following: (10)
- a) RBC
  - b) Composition and functions of gastric juice
  - c) Mechanics of respiration

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**F.Y.B.PHARM. SEMESTER-I (2011 COURSE) : SUMMER - 2018**

**SUBJECT: HUMAN ANATOMY AND PHYSIOLOGY - I**

Day: **Thursday**  
Date: **03/05/2018**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: **80**

**S-2018-3943**

**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** Define **ANY FIVE** of the following: **(10)**
- a) Lysosomes
  - b) Physiology
  - c) Anterior, Posterior
  - d) Columnar epithelium
  - e) Diagram of nerve cell
  - f) Hemostasis
  - g) Hypertension
- Q.2**
- a) Explain cardiac cycle in detail. **(08)**
  - b) Explain the factors affecting Blood pressure. **(07)**
- Q.3**
- a) Explain in detail the transport of molecules across the plasma membrane. **(08)**
  - b) Differentiate skeletal, smooth and cardiac muscle tissues. **(07)**
- Q.4** Write short notes on **ANY THREE** of the following: **(15)**
- a) Agranulocytes
  - b) ECG
  - c) Anemia
  - d) Blood Plasma

**SECTION - II**

- Q.5** Answer **ANY FIVE** of the following: **(10)**
- a) Define Lymph and write it's composition.
  - b) What is the composition and functions of pancreatic juice?
  - c) Draw neat labeled diagram of respiratory system.
  - d) What is peptic ulcer?
  - e) Enumerate the organs of digestive system with their functions.
  - f) What is pleura?
  - g) What is asthma?
- Q.6**
- a) Define internal and external respiration. Explain the gaseous exchange at lung and tissue level. **(08)**
  - b) Describe structure and functions of liver. Add a note on composition and functions of bile. **(07)**
- Q.7**
- a) Explain in detail the anatomy and physiology of intestine. **(08)**
  - b) Explain in detail the digestion and absorption of carbohydrates. **(07)**
- Q.8** Write a notes on **ANY THREE** of the following: **(15)**
- a) Spleen
  - b) Enzymes involved in digestion of food
  - c) Lungs
  - d) Stomach

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**F.Y.B.PHARM. SEMESTER-I (2011 COURSE) : SUMMER - 2018**

**SUBJECT: MODERN DISPENSING PHARMACY**

Day : **Friday**  
Date : **27/04/2018**

**S-2018-3941**

Time **10.00 AM TO 01.00 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) Define the term PMR. Enlist the importance of PMR.
  - b) Write briefly about 'Refilling instructions' in the prescription with example.
  - c) Write the various types of prescriptions.
  - d) Define the term isotonicity. Enlist its importance in parenteral dosage forms.
  - e) How many grams of sodium chloride will be required to prepare 1 lit of 3.5% solution?
  - f) What is the proof strength of 80% v/v and 40% v/v pf ethanol?
- Q.2** a) Write in detail about the handling of prescription. **(07)**  
b) Define and classify the types of containers. Enlist the features of containers. **(08)**
- Q.3** a) Define the term incompatibility. Write in detail about the physical incompatibility. **(07)**  
b) Explain the types of prescription errors with examples. **(08)**
- Q.4** Write notes on any **THREE**: **(15)**
- a) Factors affecting dose calculation
  - b) Chemical incompatibility
  - c) Development changes in USP
  - d) Pictograms and patient information leaflets

**SECTION – II**

- Q.5** Answer the following any **FIVE** : **(10)**
- a) Define the term capsule. Enlist its advantages.
  - b) Write the oil:water:gum ratio used in the preparation of emulsion.
  - c) Enlist the ideal properties of ointment bases.
  - d) Write the role and examples of suspending and emulsifying agents.
  - e) What is the labeling direction and patient counseling for **i) Linctuses ii) Throat paint**.
  - f) Differentiate between liniments and lotion with example.
- Q.6** a) Define and write the advantages of sustained release tablets. Explain the patient –counseling for the sustained release tablets. **(07)**  
b) Write in detail about the formulation aspects of suspensions. **(08)**
- Q.7** a) Define and classify the emulsion. Write in detail about the identification tests of emulsion. **(07)**  
b) Explain in detail the fundamental operations followed in case of compounding of powders. **(08)**
- Q.8** Write notes on any **THREE**: **(15)**
- a) Compounding and Dispensing aspects of Simple syrups
  - b) Suppository bases
  - c) Enemas
  - d) Type and preparation of ointment

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**F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) : SUMMER  
- 2018**

**SUBJECT : MODERN DISPENSING PHARMACY**

Day : **Friday** Time : **10.00 AM TO 01.00 PM**  
Date : **27/04/2018** Max. Marks : 60

**S-2018-3905**

**N.B.:**

- 1) **Q.No. 1 and Q.No. 5 are COMPULSORY.** Out of the 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** Answer **ANY FIVE** of the following: [10]
- a) Define the terms compounding and adjusted Incompatibility.
  - b) Enlist the role and responsibilities of community pharmacist.
  - c) Write briefly the errors in the prescription writing with example.
  - d) Define proof spirit. Enlist its pharmaceutical significance.
  - e) In what proportion may pharmacist mix 3%, 5%, 15% and 20% centrimide solutions to produce a 10% centrimide solution?
  - f) If the adult dose of ibuprofen is 500 mg. What will be the dose for a child of 4 years?
- Q.2** a) Explain briefly various signs and degradation of drug products. [06]  
b) Define PMR. Enlist its importance with suitable example. [04]
- Q.3** Explain in detail about the therapeutic incompatibility. [10]
- Q.4** Write a short notes on **ANY TWO** of the following: [10]
- a) Developmental changes in Indian pharmacopoeia
  - b) Pricing of the prescription
  - c) Refilling instructions with suitable examples

**SECTION – II**

- Q.5** Answer **ANY FIVE** of the following: [10]
- a) Differentiate between mouthwash and gargles.
  - b) Write the direction and patient counseling for collodions and liniments.
  - c) What are the ideal properties of sutures and ligatures?
  - d) Define the following terms : i) Extraction ii) Suspension.
  - e) Write the ratio of oil: water : gum for the preparation of emulsion.
  - f) Define the term tablets. Enlist its advantages over other dosage forms.
- Q.6** a) Write briefly about the physical stability of suspension. [06]  
b) Enlist briefly about the patient counseling for transdermal patches. [04]
- Q.7** Define and classify the emulsions. Explain the various factors responsible for cracking of emulsion. [10]
- Q.8** Write short notes on **ANY TWO** of the following: [10]
- a) Differentiate between maceration and percolation
  - b) Ideal properties of suppository bases
  - c) Dry syrups

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**F.Y.B.PHARM. SEMESTER-I (2011 COURSE) : SUMMER - 2018**  
**SUBJECT : PHARMACEUTICAL CHEMISTRY – I (INORGANIC)**

Day : **Friday**  
Date : **20/04/2018**

**S-2018-3939**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : 80

**N.B.:**

- 1) **Q.No. 1 and Q.No.5 are COMPULSORY.** Out of the 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** Attempt **ANY FIVE** of the following: **[10]**
- a) Write importance of the calcium in the body.
  - b) Define the term monograph and pharmacopoeia.
  - c) Give the principle involved in the limit test for sulphate.
  - d) Explain the term assay with its significance.
  - e) Explain the acidifying agents with its significance.
  - f) Write principle and reaction involved in the limit test of chloride.
- Q.2** a) Write note on limit test for Arsenic. **[08]**  
b) Write about factors affecting on purity of pharmaceutical. **[07]**
- Q.3** a) Write note on electrolytes used in acid-base therapy. **[08]**  
b) Write note on sources and impurities. **[07]**
- Q.4** Write short notes on **ANY THREE** of the following: **[15]**
- a) Limit test for heavy metal
  - b) Sodium and chloride as a major extracellular fluid ions
  - c) Ringer solution
  - d) Limit test for iron

**SECTION – II**

- Q.5** Attempt **ANY FIVE** of the following: **[10]**
- a) Give assay of aluminum hydroxide gel.
  - b) Explain how iron is stored in the body.
  - c) Give the mechanism of action of saline cathartics.
  - d) Give the ideal properties of antacids.
  - e) Explain the reaction involved in the assay of potassium iodide.
  - f) Give classification of antacids with suitable examples.
- Q.6** a) What are antacids? Give mechanism of action, properties and uses of aluminum containing antacids. **[08]**  
b) Discuss bismuth containing compounds as gastrointestinal protective and adsorbents. **[07]**
- Q.7** a) What are essential and trace elements? Discuss absorption, distribution and physiological role of iodine. **[08]**  
b) Write in detail about combination antacid preparations. **[07]**
- Q.8** Write short notes on **ANY THREE** of the following: **[15]**
- a) Physiological role of copper
  - b) Kaolin
  - c) Magnesium sulphate as cathartics
  - d) Sulphur as essential and trace element

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F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) : SUMMER  
- 2018

SUBJECT : PHARMACEUTICAL CHEMISTRY – I (INORGANIC)

Day : Friday  
Date : 20/04/2018

S-2018-3903

Time : 10.00 AM TO 01.00 PM  
Max. Marks : 60

N.B.

- 1) Q.1 and Q.5 are **COMPULSORY**. Out of the remaining solve any **TWO** questions from each section.
- 2) Answer to both 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
- a) Write physicochemical properties and uses of sodium lactate.
  - b) Define the term monograph and pharmacopoeia.
  - c) Define limit test. Give the principle involved in limit test of sulphate.
  - d) Explain the physiological role of potassium in the body.
  - e) Draw a neat labeled diagram of Gutzeit test apparatus used for Arsenic limit test.
  - f) Write physicochemical properties and uses of sodium citrate.
- Q.2**
- a) Write a note on limit test for iron. (07)
  - b) What is physiological role of chloride as a major extra and intracellular electrolyte? (03)
- Q.3**
- a) Write detail note on electrolyte combination therapy. (07)
  - b) Write principle involved in limit test of chloride and iron. (03)
- Q.4** Write notes on any **TWO**: (10)
- a) Limit test for lead
  - b) Sources of impurities
  - c) Contents of official monograph

SECTION – II

- Q.5** Solve any **FIVE**: (10)
- a) Give the ideal properties of antacids.
  - b) What are gastrointestinal protectives and adsorbents?
  - c) Write about zinc deficiency disorders.
  - d) How is iron stored in the body?
  - e) Give assay of Aluminum hydroxide gel.
  - f) Discuss the mechanism of action of saline cathartics.
- Q.6**
- a) Describe in detail magnesium and calcium containing antacids. (07)
  - b) Discuss the evaluation of antacid activity. (03)
- Q.7**
- a) Discuss absorption, distribution and biological role of iodine. (07)
  - b) Explain why combination antacid therapy is preferred over single antacid therapy? (03)
- Q.8** Write short note on any **TWO**: (10)
- a) Assay and uses of ferrous sulphate
  - b) Sulphur as essential and trace element
  - c) Magnesium sulphate as cathartics

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**F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) : SUMMER - 2018**  
**SUBJECT: PHARMACEUTICAL CHEMISTRY - II (ORGANIC)**

Day : **Monday**  
 Date : **23/04/2018**

**S-2018-3904**

Time : **10.00 AM TO 01.00 PM**  
 Max. Marks: 60

**N.B.**

- 1) **Q.1 and Q.5 are COMPULSORY.**
- 2) Solve any **TWO** of the remaining from Section - I and Section - II.
- 3) Figures to the right indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SEPARATE** answer book.

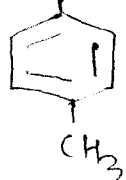
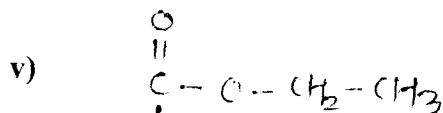
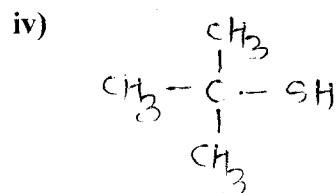
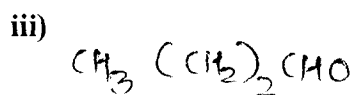
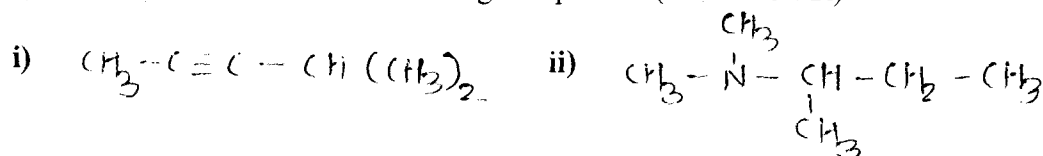
**Q.1** Answer **ANY FIVE** of the following: **(10)**

- a) How inductive effect is measured?
- b) Explain : Methyl amine is more basic than ammonia.
- c) Dipole moment of carbon tetrachloride is 0 but dipole moment of methyl chloride is 1.86 D. Why?
- d) What is dipole-dipole interaction?
- e) Why melting point of ionic compounds is higher than non-ionic compounds?
- f) What is polarity of bonds?
- g) What is Hybridization?

**Q.2** Give contributing resonating structures in the resonance hybrid. **(10)**

**Q.3** a) Give factors affecting rate of  $S_N1$  reaction. **(06)**

b) Give IUPAC names of following compounds (**ANY FOUR**) **(04)**



**Q.4** Write short notes on **ANY TWO**: **(10)**

- a) Steric effects
- b)  $S_N2$  reaction
- c) Hyper conjugation

P.T.O.

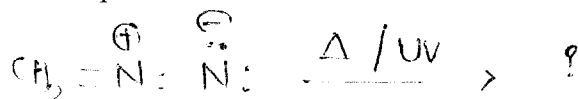
SECTION – II

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

a) Classify following into electrophiles and nucleophiles.



b) Predict the product.



c) Give different reagents used in Sulphonation reaction.

d) Define Tautomerism.

e) How specific rotation is measured?

f) Give a reaction of generation of carbanions by decomposition of carboxylate ion.

g) What is Stereospecific reaction?

**Q.6** What are reaction intermediates? Give an account on carbon radical. (10)

**Q.7** a) Explain Geometric isomerism in detail. (06)

b) Give examples of Friedel Craft acylation and alkylation reaction. (04)

**Q.8** Write short notes on ANY TWO: (10)

- a) Structural Isomerism
- b) Benzyne
- c) Nitration reaction

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Day: Monday

Date: 23-04-2018

S-2018-3940

Time: 10:00 A.M. To 1:00 P.M.

Max. Marks: 80

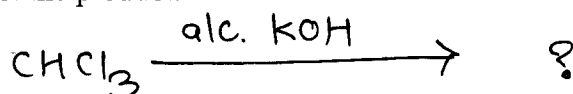
N.B:

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

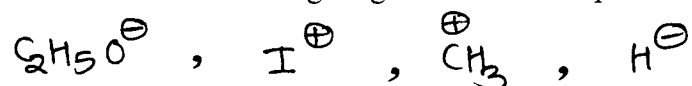
**SECTION - I**

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

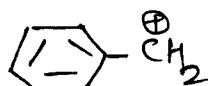
- a) What is Bond dissociation energy?
- b) What is Dipole moment? How it is calculated?
- c) Predict the product.



- d) Give Dimerisation reaction of Carbenes.
- e) Give two reactions of  $\sigma$ -complexes.
- f) Differentiate the following reagents into Nucleophiles and Electrophiles.



- g) Give resonance involved in following Carbocation.

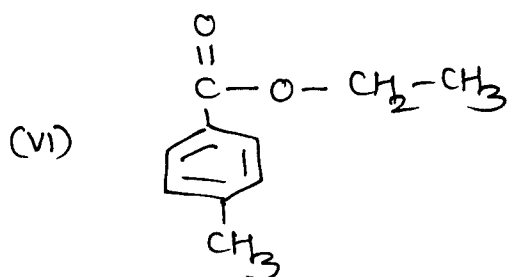
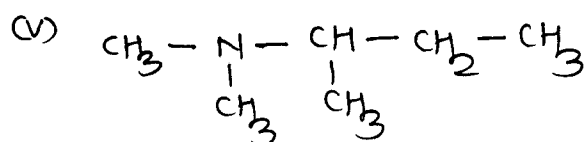
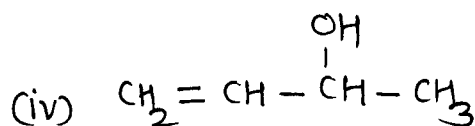
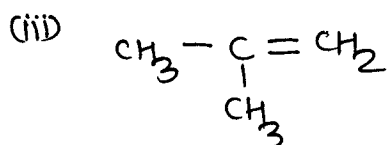
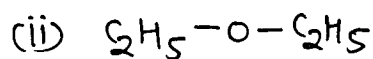
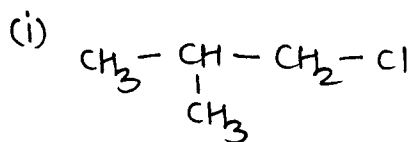


**Q.2** a) Give different types of Steric effects with suitable examples. (10)

b) Give Lewis Dash-dot method of writing resonance. (05)

**Q.3** a) Define reaction intermediates. Give methods of preparation and reactions of Carbanions and  $\pi$ -complexes. (10)

b) Give IUPAC names of following compounds. (any FIVE) (05)

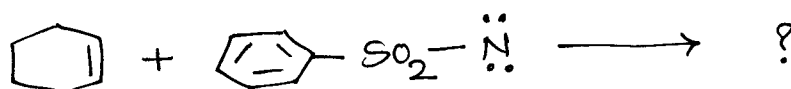


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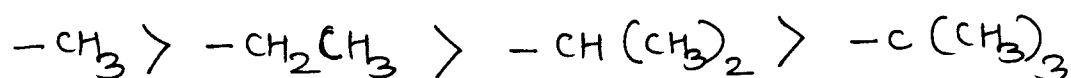
- Q.4** Write short notes on **ANY THREE** of the following: (15)
- Optical Isomerism
  - Hybridization
  - Melting Point
  - Nitration reactions

**SECTION -II**

- Q.5** Answer **ANY FIVE** of the following: (10)
- How bond length affects bond energy? Explain with example.
  - What are Vander Waals forces of attraction?
  - Predict the product.



- Explain:  $\sigma$ -complex salt isolation is possible. Give one example.
  - Enlist different reagents used in Sulphonation reactions.
  - What is Ingold scale?
  - Explain Steric strain with suitable example.
- Q.6** a) Explain: Alkyl groups attached to benzene ring have +I effect in the following order. (08)



- b) Give applications of Inductive effect. (07)
- Q.7** a) Give definition, reaction, mechanism, kinetics, stereochemistry and factors affecting rate of  $\text{S}_{\text{N}}2$  reaction. (15)

- Q.8** Write short notes on **ANY THREE** of the following: (15)
- Benzynes
  - Collision theory
  - Carbon radicals
  - $\text{S}_{\text{N}}1$  reactions

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Day: **Monday**  
Date: **30/04/2018**

**S-2018-3906**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 60

**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) Answer to the both sections should be written in **SEPARATE** answer books.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.

**SECTION - I**

- Q.1** Attempt **ANY FIVE** of the following: (10)
- a) Give significance of size reduction in pharmacy.
  - b) Explain extraction by simple multiple contact.
  - c) What is laminar flow?
  - d) Draw labeled diagram of sieve bend.
  - e) Give significance of Reynold's number.
  - f) What is mechanism of cutter mill?
- Q.2** a) Explain principle and working of Edge & End runner mills with suitable diagrams. (06)
- b) Add a note on theory of size reduction. (04)
- Q.3** a) Explain in detail pressure measurement equipments. (06)
- b) Explain effectiveness of screens. (04)
- Q.4** Write short notes on **ANY TWO** of the following: (10)
- a) Bernoulli's Theorem
  - b) Rotocel extractor
  - c) Variable area flowmeters

**SECTION - II**

- Q.5** Attempt **ANY FIVE** of the following: (10)
- a) Give applications of HEPA filter.
  - b) What are chemical hazards?
  - c) Explain types of filtration.
  - d) Give mechanisms for mixing of solids.
  - e) What are objectives of mixing?
  - f) Give ideal properties of filter medium.
- Q.6** a) Describe methods to test integrity of membrane filters. (06)
- b) Explain principle & working of rotary drum filter. (04)
- Q.7** a) Enlist solid-liquid mixing equipments. Explain principle & working of any one of them. (06)
- b) Write a note on impellers. (04)
- Q.8** Write short notes on **ANY TWO** of the following: (10)
- a) Mechanical hazards
  - b) Filter press
  - c) Colloid mill

**F.Y.B.PHARM. SEMESTER-I (2011 COURSE) : SUMMER - 2018**  
**SUBJECT: PHARMACEUTICAL ENGINEERING I**

**Day: Monday**  
**Date: 30/04/2018**

**S-2018-3942**

**Time: 10.00 AM TO 01.00 PM**  
**Max. Marks: 80**

**N.B:**

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.**
- 2) Solve **ANY TWO** questions from each section from the remaining.
- 3) Draw neat diagram **WHEREVER** necessary.

**SECTION-I**

- Q.1** Solve **ANY FIVE:** **(10)**
- a) What is the significance of size reduction in pharmacy?
  - b) Explain the terms cutting and attrition.
  - c) What is turbulent flow?
  - d) What are variable area flow meters?
  - e) What is application of sieve bend?
  - f) Give Fick's law for mass transfer.
- Q.2** a) Explain mass transfer in solids and liquids. **(10)**  
b) Discuss factors affecting screening. **(05)**
- Q.3** a) Explain construction and working of hammer mill. **(08)**  
b) What are Bernoulli's experiments applications? **(07)**
- Q.4** Write short notes on (**ANY THREE**): **(15)**
- a) Fluid flow through packed bed
  - b) Interfacial mass transfer
  - c) Effectiveness of screens
  - d) Theory of size reduction

**SECTION-II**

- Q.5** Solve **ANY FIVE:** **(10)**
- a) What is significance of mixing in pharmacy?
  - b) Give examples of filter aids.
  - c) What is leaching?
  - d) What is hot flower extraction?
  - e) Give two methods for deaeration of liquid.
  - f) Give principle of Rotocel extractor.
- Q.6** a) What is mixing? Explain in detail mixing equipments for solid liquid mixing. **(10)**  
b) Discuss methods for extraction of volatile oils. **(05)**
- Q.7** a) What do you mean by integrity of filters? Explain methods for integrity testing of membrane filters. **(08)**  
b) Explain different mechanisms of solid liquid extraction. **(07)**
- Q.8** Write short notes on (**ANY THREE**): **(15)**
- a) HEPA filter
  - b) Bollman extractor
  - c) Triangular diagram in extraction
  - d) Wet scrubbers

**F.Y.B.PHARM. SEMESTER-I (2011 COURSE) : SUMMER - 2018**  
**SUBJECT: PHARMACEUTICAL STATISTICS**

Day: **Saturday**  
Date: **05/05/2018**

**S-2018-3944**

Time: **10.00 AM TO 01.00 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) Use of Non-programmable electronic pocket calculator is permissible.
- 5) Statistical Tables and Graph Papers will be provided at the examination centre.

**SECTION – I**

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

- a) Explain the concept of measure of central tendency.
- b) Check whether the following function is probability mass function.  
$$P(x) = \frac{1}{10}, x = 1, 2, \dots, 10.$$
- c) If  $X \sim B(n, p)$  with  $E(X) = 20$  and  $V \text{ar}(X) = 16$ , find  $p$  and  $n$ .
- d) What are different types of correlation? Explain.
- e) If  $A$  and  $B$  are two events defined on  $\Omega$  with  $P(A) = 0.4$ ,  $P(B) = 0.5$ ,  $P(A \cap B) = 0.3$  Find,  $P(A')$  and  $P(A \cup B)$ .
- f) A random variable  $X$  has following probability distribution.

X	1	2	3	4	5	6
P(x)	1/36	3/36	5/36	7/36	9/36	11/36

Find  $E(X)$ .

**Q.2** Find the correlation coefficient, the coefficient of determination to the following data. Also fit the linear trend  $Y = a + bX$  to this data. **(15)**

Fat intake (gm) (X)	100	120	130	160	180	200	240
Weight (kg) (Y)	62	64	68	72	80	90	94

**Q.3** a) The frequency distribution of 189 patients according to their age is given below: **(07)**

Age	30-40	40-50	50-60	60-70	70-80	80-90
No. of Patients	11	46	70	45	16	1

Draw a histogram to the above data and find mode from it.

- b) In a study, the Poisson distribution was used to model the number of patients per month referred to an oncologist. The researcher use a average rate of 5 patients per week that are referred to the oncologist. Find the probability that in a week.  
  - i) Exactly 2 patients are referred to an oncologist.
  - ii) Between 1 to 3 (including both) are referred to an oncologist.
  - iii) No patient is referred to an oncologist.

**P.T.O.**

- Q.4 a)** The data for measurements of the left ischial tuberosity ( in mm Hg) for the spinal cord injury (SCI) are given below. (08)  
 60, 150, 130, 180, 163, 130, 121, 119, 130, 148  
 Find:  
 i) Mean left ischial tuberosity.  
 ii) Median left ischial tuberosity  
 iii) Variance of left ischial tuberosity.  
**b)** Given the normally distributed population with a mean of 75 and a variance of 625, find : (07)  
 i)  $P(50 < X < 100)$  ii)  $P(X < 75)$ .

**SECTION - II**

- Q.5** Solve ANY FIVE of the following: (10)
- Define 'Sample' and 'Population'.
  - What is the Degree of freedom (d.f.) in respect of a 2X2 contingency Table?
  - Distinguish: Parameter versus Statistics.
  - Explain completely Randomized Design
  - What are the disadvantages of using the 'Cross -Over Design'?
  - When do we use C - chart.
- Q.6 a)** The manufacturer of the lamps used in the operation theatre claims that the mean life of the lamps is 8400 hrs with a S.D. of 250hrs. When 100 such lamps are checked it showed the mean life of 8300 hrs. Can you justify the manufacturer's claims? (Use 5% L.O.S.) (08)
- b)** As per the hypothesis in the blood groups A, B, AB and O the individuals are in the ratio 3 : 2 : 5 when a group was tested it showed 73 in A group 56 in B group, 47 in AB group and 14 in O group. Does it support the hypothesis? (Use 5% L.O.S.). (07)
- Q.7 a)** Following data shows the effect of the use of a drug for the recovery from a disease in a stipulated time. (08)

	Use of new Drug	Use of the conventional Drug
Recovered	82	68
Not recovered	18	32

- Would you recommend the use of the new drug. (Use 5% L.O.S.).
- b)** Number of patients admitted to the two hospitals A and B during a week are as below: (07)

	No. of Patients Admitted						
	Mon	Tue	Wed	Thur	Fri	Sat	Sun
A	35	45	63	57	44	39	27
B	32	49	57	51	42	43	22

Indicate using the sign test whether the number of patients admitted to both the hospital is significantly different.

- Q.8 a)** Explain in details the term 'Statistical Quality Control (S.Q.C.)' with the various charts. (08)
- b)** Describe 'Tests of Inference' and Hypothesis'. (07)

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**F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) : SUMMER**  
**- 2018**  
**SUBJECT: PHARMACEUTICAL STATISTICS**

Day: **Saturday**  
 Date: **05/05/2018**

**S-2018-3908**

Time: **10.00 AM TO 01.00 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 Section – I and any **TWO** questions from Section – II.
- 2) Answers to the two sections should be written in **SEPARATE** answer books. .
- 3) Figures to the **RIGHT** indicate full marks.
- 4) Draw diagrams or graph **WHEREVER** necessary

**SECTION – I**

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

- a) Define median and mode.
- b) Explain primary data.
- c) Explain the term probability distribution.
- d) Define Poisson distribution.
- e) If  $byx = \frac{9}{20}$  and  $bxy = \frac{4}{5}$  find correlation coefficient between X and Y.
- f) State mean and variance of normal distribution.

**Q.2** Weight in miligram of 25 residuals are given below: **(15)**

50, 46, 31, 49, 33, 42, 55, 37, 36, 35, 65, 57, 27, 37, 42

Find:

- i) Mean and median weight of residual.
- ii) Variation in weight of residuals.
- iii) Coefficient of variation of weight in residuals.

**Q.3** Find out the coefficient of correlation between the per capita income and the price level from the following data. Also fit the line of regression of Y on X. **(15)**

<b>Per Capita income (Y)</b>	360	420	500	550	600	590
<b>Price index (X)</b>	100	110	120	160	280	290

**Q.4** Attempt any **THREE** of the following. **(15)**

- a) Draw a histogram for the following data related to the sales of 100 companies.

Sales (Rs. In Lakhs)	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
No. of companies	5	12	13	20	18	15	10	07

- b) State the properties of normal distribution.
- c) State the properties of regression coefficients.
- d) An oil exploration firm finds that 5% of the test wells if drills yield a deposit of natural gas. If it drills 6 wells, find the probability that at least one well will yield gas

**SECTION - II**

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

- a) Define null hypothesis.
- b) Define critical region.
- c) Explain t- test.
- d) What is level of significance?
- e) Explain sign test.
- f) Define parametric test.

**Q.6** a) Discuss Chi – Square test of independence of attributes. **(07)**

- b) A sample of size 20 from normal population gives sample mean of 42 and standard deviation 6. Test the hypothesis that population standard deviation is 9. **(08)**

**Q.7** Discuss briefly on various non parametric tests. **(15)**

**Q.8** Attempt any **THREE** of the following. **(15)**

- a) Test of significance of means.
- b) Analysis of variance.
- c) Latin square designs.
- d) Explain briefly control chart for means.

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**F.Y.B.PHARM. SEMESTER-II (CBCS - 2015 COURSE) :**  
**SUMMER - 2018**  
**SUBJECT : COMMUNITY PHARMACY & HOSPITAL PHARMACY**

Day : **Friday**  
Date : **04/05/2018**

**S-2018-3913**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : 60

**N.B.:**

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the 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) Define the term Good Pharmacy practice and its importance.
  - b) Enlist the importance of health screening services.
  - c) What are the legal requirements to start the community pharmacy?
  - d) Define the term OTC medications with example.
  - e) What are the signs and symptoms of Malaria?
  - f) Explain the role of pharmacist in the management of worm infestations.
- Q.2** a) Define the term medication adherence. Write in detail about the factors affecting medication adherence. [06]  
b) Enlist the use of computers in community pharmacy. [04]
- Q.3** Define and explain various methods of family planning. [10]
- Q.4** Write short notes on **ANY TWO** of the following: [10]
- a) Various stages of patient counselling
  - b) Factors considered for the selection of site of pharmacy
  - c) Symptoms, primary line of treatment and patient counselling Tuberculosis

**SECTION – II**

- Q.5** Answer **ANY FIVE** of the following: [10]
- a) Draw the ideal layout of CSSD.
  - b) Define the following terms: i) Lead time ii) Safety stock
  - c) Define and enlist the functions of hospital pharmacist.
  - d) Write the composition and functions of PTC.
  - e) Write the concept of Genetic drugs with example.
  - f) Enlist the importance of HFS in the hospital.
- Q.6** a) Define and classify the methods of inventory control. Explain the EOQ as a effective method for inventory control. [06]  
b) Write the role of PTC in the drug safety programme. [04]
- Q.7** Define and classify Hospital. Explain in detail organizational set-up of hospital. [10]
- Q.8** Write short notes on **ANY TWO** of the following: [10]
- a) Role and responsibilities of hospital pharmacist
  - b) Drug distribution system for indoor patients
  - c) Role of pharmacist in the management of nuclear pharmacy

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**F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018**  
**SUBJECT : COMMUNITY PHARMACY & HOSPITAL PHARMACY**

Day : Friday  
Date : 04/05/2018

**S-2018-3949**

Time : 10.00 AM TO 01.00 PM  
Max. Marks : 80

**N.B.**

- 1) Q.1 and Q.5 are **COMPULSORY**. Out of the remaining questions solve 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.

**SECTION – I**

- Q.1** Answer any **FIVE** questions: (10)
- a) Enlist the importance of rational drug therapy.
  - b) Explain the term pharmaceutical care.
  - c) What are the various registers related to community pharmacy management?
  - d) Write briefly about stocking of various medicines in community pharmacy.
  - e) What is common drug therapy and patient counseling in case of diarrhea?
  - f) Define and write the importance of essential drug concept.
- Q.2** a) Define the term patient medication adherence. Explain the role of pharmacist in patient medication adherence. (07)  
b) Explain the role of computers in case of community pharmacy management. (08)
- Q.3** a) Define and enlist the importance of health screening services. Explain the role of pharmacist in blood pressure management. (07)  
b) What are the various legal requirements for starting community pharmacy? (08)
- Q.4** Write short note on any **THREE**: (15)
- a) Patient counseling aids
  - b) Factors considered for site selection for community pharmacy
  - c) Non pharmacological therapy to GI disturbance
  - d) Code of ethics for community pharmacist

**SECTION – II**

- Q.5** Answer any **FIVE** questions: (10)
- a) Scope of hospital pharmacy
  - b) Enlist the role of pharmacists in Chemotherapy.
  - c) PTC and its importance
  - d) Functions of hospitals
  - e) Define and classify sterilization methods used in CSSD
  - f) Differentiate between charged and non charged drugs with example.
- Q.6** a) Explain in detail use of radiopharmaceuticals and role of pharmacist in handling of radiopharmaceuticals. (07)  
b) Write the composition and working of PTC. (08)
- Q.7** a) Explain in detail about functions and methods of sterilization in CSSD. (07)  
b) Define and write the importance of inventory control. (08)
- Q.8** Write short note on any **THREE**: (15)
- a) Intravenous admixture programme
  - b) Composition of hospital formulary system
  - c) Distribution of controlled drugs
  - d) Satellite pharmacy

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**F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018**  
**SUBJECT: HUMAN ANATOMY & PHYSIOLOGY – II**

Day: **Monday**  
Date: **07/05/2018**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 80

**S-2018-3950**

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

**SECTION-I**

- Q.1** Answer any **FIVE** of the following: **(10)**
- a) Enlist the functions of glucocorticoids.
  - b) Define diabetes mellitus. Differentiate its types.
  - c) Define achromatopsia.
  - d) Write a brief note on vertigo.
  - e) What is glomerulonephritis?
  - f) Define Otitis media.
- Q.2** a) Explain in detail the physiology of urine formation. **(08)**
- b) Explain in detail the steps involved in formation of thyroid hormones. **(07)**
- Q.3** a) Explain in detail the anatomy of skeletal muscle. Add a note on neuromuscular junction. **(08)**
- b) Explain in detail the physiology of vision. **(07)**
- Q.4** Write short notes on any **THREE** of the following: **(15)**
- a) Insulin
  - b) Structure of nephron
  - c) Physiology of hearing
  - d) Pituitary hormones

**P. T. O.**

## SECTION-II

- Q.5** Answer any **FIVE** of the following: **(10)**
- a) Enlist the functions of medulla oblongata.
  - b) Classify nervous system.
  - c) What is CSF? Enlist its functions.
  - d) What are sensory neurons?
  - e) Enlist the drugs abused by athletes.
  - f) What happens to respiration during exercise? Explain the reasons for it.
- Q.6** a) Name the types of reflexes. Explain in detail conditioned reflexes. **(08)**
- b) Explain in detail the anatomy of cerebellum. **(07)**
- Q.7** a) Explain the changes that take place in ovaries and uterus during a menstrual cycle. **(08)**
- b) Explain the structure of integumentary system. **(07)**
- Q.8** Write short notes on any **THREE** of the following: **(15)**
- a) Hypothalamus
  - b) Sympathetic nervous system
  - c) Body fluids and salts in exercise
  - d) Anatomy of male reproductive system

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**F.Y.B.PHARM. SEMESTER-II (CBCS - 2015 COURSE) :**

**SUMMER - 2018**

**SUBJECT: HUMAN ANATOMY & PHYSIOLOGY – II**

Day : **Monday**  
Date : **07/05/2018**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : 60

**S-2018-3914**

**N.B.:**

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the 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) What is urinary trigone?
  - b) Draw a neat labeled diagram of kidney.
  - c) Define tetany.
  - d) What is thermoregulation?
  - e) Define goiter.
  - f) Enlist the functions of gonadal hormones.
  - g) Define glaucoma.
- Q.2** Discuss in detail the physiology of urine formation. Add a note on factors regulating glomerular filtration rate. [10]
- Q.3**
- a) Explain in detail the anatomy of skin. [06]
  - b) Write a brief note on anatomy of ear. [04]
- Q.4** Write short notes on **ANY TWO** of the following: [10]
- a) Oxytocin
  - b) Physiology of micturition
  - c) Physiology of vision

**SECTION – II**

- Q.5** Answer **ANY FIVE** of the following: [10]
- a) Classify neurotransmitters.
  - b) What are sensory and motors neurons?
  - c) Write the composition and functions of CSF?
  - d) Draw neat labeled diagram of T.S of testes.
  - e) What is the effect of exercise on body heat?
  - f) What is dysmenorrhea?
  - g) What are ventricles of brain?
- Q.6** Name the cranial nerves. Explain anatomy of spinal cord and comment on reflex arc. [10]
- Q.7**
- a) Explain the process of oogenesis in detail. [06]
  - b) Explain the effect of exercise on body fluids and salts. [04]
- Q.8** Write short notes on **ANY TWO** of the following: [10]
- a) Medulla oblongata
  - b) Menstrual cycle
  - c) Differentiate sympathetic and parasympathetic nervous system

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**F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018**

**SUBJECT: PHARMACEUTICAL BIOCHEMISTRY-I**

Day: **Saturday**  
Date: **28/04/2018**

**S-2018-3947**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 80

**N.B:**

- 1) Question 1 and question 5 are **COMPULSORY**, and out of remaining solve any **TWO** question 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) What are lysosomes?
- b) Define coenzymes and give two examples.
- c) What is affinity matrix in affinity chromatography?
- d) State any one bio-analytical application of enzyme.
- e) What are antimetabolites?
- f) Define iso-electric point.

**Q.2** Answer **ANY THREE** of the following: **(15)**

- a) Describe membrane structure and explain working of sodium-potassium pump.
- b) What are lipids? Give their classification with examples.
- c) State classification of proteins. Give examples for each class.
- d) What are excitable membrane? Explain in detail.

**Q.3** Answer **ANY THREE** of the following: **(15)**

- a) What is enzyme immobilization? Discuss different methods of immobilization.
- b) Describe biochemical morphology of mitochondria.
- c) How mixture of proteins is separated on the basis of molecular weight?
- d) What is enzyme specificity? Explain in detail.

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

- a) Allosteric Enzymes.
- b) Effect of pH on rate of enzyme catalyzed reaction
- c) Isoenzymes
- d) Nutritional value of proteins

**SECTION-II**

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

- a) What is Michaelis-Menten Constant of enzyme?
- b) What is an active site of enzyme?
- c) What are essential fatty acids? Give one example.
- d) State the structure of tryptophan and lysine
- e) State Edman's Reagent.
- f) What are prosthetic groups?

**P.T.O.**

**Q.6** Answer the following: (15)

- a) What is diffusion? Explain different types of diffusion seen in biological systems.
- b) What is primary structure and how it is determined?
- c) Describe pharmaceutical use of proteins in detail.

**Q.7** Answer the following: (15)

- a) Illustrate the principle of electrophoresis. How proteins are separated by electrophoresis.
- b) Describe the amino acid classification with examples.
- c) What is protein denaturation? Explain in detail.

**Q.8** Write Short notes on the following: (15)

- a) Protein Data Bank
- b) Role of metal ion in protein structure
- c) Electro-dialysis

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**F.Y.B.PHARM. SEMESTER-II (CBCS - 2015 COURSE) :  
SUMMER - 2018**

**SUBJECT : PHARMACEUTICAL BIOCHEMISTRY – I**

Day : **Saturday**  
Date : **28/04/2018**

**S-2018-3911**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : 60

**N.B.**

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

**SECTION – I**

- Q.1** Answer any **FIVE** of the following: (10)
- a) What is enzyme specificity?
  - b) What are essential fatty acids? Give examples.
  - c) Name any two hydrophobic amino acids and give their structure.
  - d) What are crude fibers? Give their examples and pharmaceutical uses.
  - e) What is hard gelatin? How it is obtained.
  - f) What are allosteric modulators? Give examples.
- Q.2** a) State Michaelis-Menten equation for the rate of enzyme catalyzed reaction. Explain the meaning of each term and discuss the factors affecting the rate of enzyme catalyzed reaction. (07)
- b) Name any two enzymes which hydrolyze proteins. (03)
- Q.3** a) Describe fluid mosaic model of bio-membrane and explain membrane fluidity. (07)
- b) Give partial structure of amylopectin. (03)
- Q.4** Write notes on any **TWO** of the following: (10)
- a) Protein Data Bank (PDB)
  - b) Conformation of active site of enzymes.
  - c) Edman method for amino acid sequencing

**SECTION – II**

- Q.5** Attempt any **FIVE** of the following: (10)
- a) How enzymes are used for clinical diagnosis?
  - b) State industrial use of enzyme penicillin acylase?
  - c) Give the structure of sucrose and maltose?
  - d) What are liposome?
  - e) What are conjugated proteins? Give examples.
  - f) State any two industrial applications of enzymes.
- Q.6** a) What is enzyme immobilizations? Describe different types of immobilizations. (07)
- b) What are excitable membrane? Give examples. (03)
- Q.7** a) What are polysaccharide? Give their classification with examples. (07)
- b) State pharmaceutical uses of proton pump inhibitors. (03)
- Q.8** Write notes on any **TWO** of the following: (10)
- a)  $\alpha$ -Helix conformation of peptide
  - b) Classification of lipids
  - c) Mitochondria

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**F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018**

**SUBJECT : PHARMACEUTICAL CHEMISTRY – III (INORGANIC)**

Day : **Saturday**  
Date : **21/04/2018**

**S-2018-3945**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : 80

**N.B.:**

- 1) **Q.No. 1 and Q.No.5 are COMPULSORY.** Out of the 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** Attempt **ANY FIVE** of the following: [10]
- a) Give preparation and properties of titanium oxide.
  - b) What is mean by topical agents? Classify them with suitable example.
  - c) Write the uses of astringent.
  - d) Define disinfectant and fungicide.
  - e) Write uses of Talc.
  - f) What is dissociation constant? Give its significance.
- Q.2** a) Explain various methods for softening temporary hard water. [08]  
b) What are antimicrobials? Discuss the various mechanism of antimicrobial action with examples. [07]
- Q.3** a) Write in detail note on zinc oxide. [08]  
b) Write note on Alum and Boric acid on Astringent. [07]
- Q.4** Write short notes on **ANY THREE** of the following: [15]
- a) Topical agents
  - b) Antioxidants
  - c) Potassium permanganate
  - d) Official control test for water

**SECTION – II**

- Q.5** Attempt **ANY FIVE** of the following: [10]
- a) Define expectorants and emetics.
  - b) What is laughing gas? Give its uses.
  - c) Why elements in radio contrast media should have high atomic number?
  - d) Give the mechanism of action of emetics.
  - e) Give the role of dibasic calcium phosphate in dental products.
  - f) What are desensitizing agents? Give examples.
- Q.6** a) What are anticaries agents? Discuss the role of fluoride as anticaries agents. [08]  
b) Describe the properties, role and uses of oxygen gas. [07]
- Q.7** a) What do you mean by radio opaque contrast media? Discuss preparation, properties and uses of calcium sulphate. [08]  
b) Discuss about cyanide poisoning. [07]
- Q.8** Write short notes on **ANY THREE** of the following: [15]
- a) Assay and uses of carbon dioxide
  - b) Dentifrices
  - c) Helium gas
  - d) Expectorants and emetics

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**F.Y.B.PHARM. SEMESTER-II (CBCS - 2015 COURSE) :**  
**SUMMER - 2018**

**SUBJECT: PHARMACEUTICAL CHEMISTRY – III (Inorganic)**

Day: **Saturday**  
Date: **21/04/2018**

**S-2018-3909**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 60

**N.B.:**

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

**SECTION-I**

- Q.1** Attempt any **FIVE** of the following: **(10)**
- a) Write the uses of Boric acid.
  - b) Write the role of phosphate buffer system.
  - c) What are antioxidants?
  - d) Write the mechanism of action of alum.
  - e) Define preservatives with suitable examples.
  - f) Write the principle involved in the assay of potassium permanganate.
- Q.2** a) Describe the methods of removal of hardness of water. **(07)**  
b) Write a note on Talc as a preservative. **(03)**
- Q.3** a) Write note on Antimicrobial agents. **(07)**  
b) Describe water as a Universal Pharmaceutical Vehicle. **(03)**
- Q.4** Write short notes on any **TWO** of the following: **(10)**
- a) Astringents
  - b) Official control test of water
  - c) Zinc oxide as preservative

**SECTION-II**

- Q.5** Solve any **FIVE** of the following: **(10)**
- a) Give the role of oxygen in the body.
  - b) Why stannous fluoride solution should be freshly prepared.
  - c) What is laughing gas? Give its uses.
  - d) How dental caries are formed?
  - e) Classify expectorants with their mode of action and example.
  - f) Give mechanism of action of fluoride ion as anti-caries agent.
- Q.6** a) Describe preparation, assay and uses of oxygen and sodium fluoride. **(07)**  
b) What are desensitizing agents? Give suitable examples. **(03)**
- Q.7** a) Classify antidotes? Give detailed account of sodium Nitrite and sodium thiosulphate. **(07)**  
b) List out the requirements of ideal radiopaque contrast medium. **(03)**
- Q.8** Write short notes on any **TWO** of the following: **(10)**
- a) Assay and uses of ammonium chloride
  - b) Polishing agents
  - c) Copper Sulphate

F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018

SUBJECT: PHARMACEUTICAL CHEMISTRY - IV

Day: Tuesday  
Date: 24/04/2018

S-2018-3946

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 80

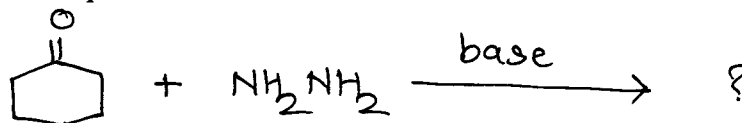
N.B:

- 1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Solve **ANY TWO** of the remaining 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) Predict the product:



- b) What is Dow's process?
- c) Give a reaction of  $\alpha$ -elimination.
- d) What happens when methanol is treated with ammonia in presence of aluminium oxide?
- e) How *p*-bromoaniline is obtained from aniline?
- f) How aldehydes are obtained from alcohols?
- g) What is Carbylamine test?

Q.2 a) Give any ten reactions of phenols. (10)

b) What is Esterification reaction? Give its mechanism. (05)

Q.3 a) Explain Anti-Markovnikov rule by giving mechanism. (07)

b) What is reductive amination reaction? (03)

c) What happens when amines react with nitrous acid? (05)

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

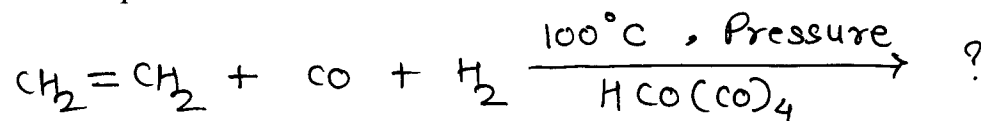
- a) Knoevenagel condensation
- b) Aldol condensation
- c) Separation of mixture of amines
- d) Synthesis of carboxylic acids

P.T.O.

**SECTION -II**

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

- a) How phenol is obtained from coal?
- b) What happens when benzene is distilled with  $H_2O_2$  in presence of Fluorosulphonic acid?
- c) What is  $E1_{(CB)}$  mechanism?
- d) What is Mannich reaction?
- e) Predict the product:



- f) How formaldehyde gas is handled in laboratories?
- g) What is Clemmensen reduction of aldehyde?

**Q.6** a) Give Saytzeff orientation and Hofmann orientation in Elimination reaction. **(08)**

b) What is Hofmann's Mustard oil reaction of primary amine? **(02)**

c) What is Dieckmann condensation? **(05)**

**Q.7** a) What happens when Alkenes are treated with ozone? Explain with mechanism. **(07)**

b) Give Gabriel phthalimide synthesis of primary amines. **(03)**

c) Give reaction and mechanism involved in Hofmann Rearrangement. **(05)**

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

- a) Hydroboration
- b) Hydroxylation
- c) Oxidative degradation of aldehydes
- d) Reactions of derivatives of ammonia with aldehydes

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F.Y.B.PHARM. SEMESTER-II (CBCS - 2015 COURSE) :  
SUMMER - 2018

SUBJECT: PHARMACEUTICAL CHEMISTRY – IV (Organic)

Day: Tuesday  
Date: 24/04/2018

S-2018-3910

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

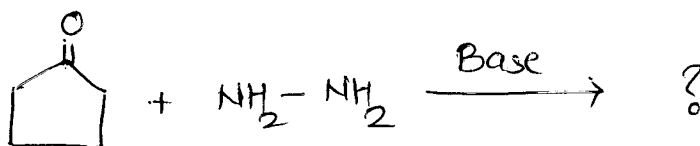
N.B.:

- 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.

SECTION-I

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

- a) How ketones are reduced to alcohols?
- b) Predict the product:



- c) What happens when alcohol is treated with pyridinium chlorochromate? Give one example.
- d) What is Gatterman-Koch reaction?
- e) What product is obtained when alkenes are treated with Osmium tetroxide?
- f) What is epoxidation reaction?
- g) What is Tollens test?

Q.2 What is Aldol condensation? Give its mechanism. (10)

Q.3 a) Give addition of HBr to asymmetric alkenes with mechanism. (05)  
b) Give addition of derivatives of ammonia to aldehydes. (05)

Q.4 Write short notes on any **TWO** of the following: (10)

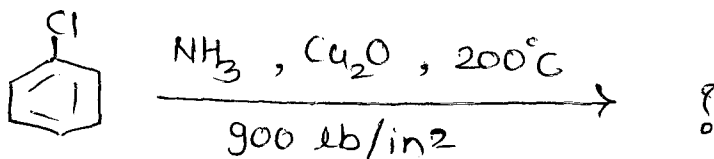
- a) Ozonolysis
- b) Claisen condensation
- c) Hydroboration
- d) Dieckman condensation

P. T. O.

## SECTION-II

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

- a) What is Koch reaction?
- b) Give structure of Caproic and Myristic acid.
- c) What happens when carboxylic acid is treated with thionyl chloride?
- d) Predict the product:



- e) What happens when alcohols are treated with ammonia?
- f) What is Gabriel phthalimide synthesis of amines?
- g) What is diazotization reaction?

**Q.6** Differentiate between Elimination and Substitution reaction with suitable examples. **(10)**

**Q.7** a) What happens when alcohol is treated with carboxylic acid? Explain with mechanism. **(05)**

b) What is Kolbe reaction? **(05)**

**Q.8** Write short notes on any **TWO** of the following: **(10)**

- a)  $\text{E1(cb)}$  mechanism
- b) Saytzeff orientation
- c) Separation of amines by Hofmann method
- d) Malonic ester synthesis

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**F.Y.B.PHARM. SEMESTER-II (2011 COURSE) : SUMMER - 2018**

**SUBJECT: PHARMACEUTICAL ENGINEERING - II**

Day: **Wednesday**  
Date: **02/05/2018**

**S-2018-3948**

Time: **10.00 AM TO 01.00 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 the **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

**SECTION - I**

- Q.1** Solve any **FIVE** of the following: **(10)**
- a) What are modes of heat transfer?
  - b) What is principle of climbing film evaporator?
  - c) Explain various stages of drying.
  - d) Explain working of heat exchangers in general.
  - e) Enlist factors affecting distillation.
  - f) What is vapor recompression?
- Q.2** a) Classify distillation processes. Discuss in detail about azeotropic distillation. **(10)**  
b) Discuss in detail about tubular heat exchanger. **(05)**
- Q.3** a) Explain principle construction and working of falling film evaporator. **(08)**  
b) Explain theories of drying. **(07)**
- Q.4** Write notes on any **THREE** of the following: **(15)**
- a) Vacuum distillation
  - b) Plate heat exchanger
  - c) Forced circulation evaporator
  - d) Scale formation

**SECTION - II**

- Q.5** Attempt any **FIVE** of the following: **(10)**
- a) What is diffusion in crystallization?
  - b) What is pelletization?
  - c) Give principle of tablet compression machine.
  - d) What is antisolvent crystallization?
  - e) Give principle of fluid bed granulation.
  - f) What is dosator principle in capsule filling?
- Q.6** a) Give different methods for crystallization. Discuss in detail crystallizers using cooling methods. **(10)**  
b) What is principle of co-crystallization? Explain it with examples? **(05)**
- Q.7** a) Explain principle of crystallization adiabatic evaporation process. Add a note on any equipment based on the same principle. **(08)**  
b) Explain principle working of fluidized bed granulation with its application. **(07)**
- Q.8** Write note on any **THREE** of the following: **(15)**
- a) Miers theory of crystallization
  - b) Extrusion spherodization
  - c) Roller compactor
  - d) Growth type crystallizer

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Day: Wednesday

Date: 02/05/2018

S-2018-3912

Time: 10.00 AM TO 01.00 PM

Max. Marks: 60

**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) Answer to the both sections should be written in **SEPARATE** answer books.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.

**SECTION - I**

- Q.1** Attempt **ANY FIVE** of the following: (10)
- a) What is vapour recompression?
  - b) Classify drying equipments.
  - c) Enlist different types of heat exchangers.
  - d) What is H.E.T.P.?
  - e) Draw labeled diagram of forced circulation evaporator.
  - f) Enlist steps involved in freeze-drying process.
- Q.2** a) Classify evaporators. Explain principle and working of multiple effect evaporator. (06)
- b) Explain principle and working of mechanical traps. (04)
- Q.3** a) Derive an expression for heat transfer between fluid and solid boundary. (06)
- b) Explain principle and working of spray dryer. (04)
- Q.4** Write short notes on **ANY TWO** of the following: (10)
- a) Theory of drying
  - b) Scale formation
  - c) Packings in column

**SECTION - II**

- Q.5** Attempt **ANY FIVE** of the following: (10)
- a) What is anti-solvent crystallization?
  - b) Give ideal characteristics of containers and closures.
  - c) Enlist the interactions between primary packaging material and the included pharmaceutical product.
  - d) Classify crystallizers.
  - e) What is caking of crystals?
  - f) Enlist advantages and disadvantages of plastic as a packaging material.
- Q.6** a) Enlist techniques of granulation. Explain principle and working of fluid bed granulator. (06)
- b) Add a note on crystallization by cooling. (04)
- Q.7** a) Explain in detail theories of crystal growth. (06)
- b) Explain the concept of spray drying and congealing. (04)
- Q.8** Write short notes on **ANY TWO** of the following: (10)
- a) Mier's theory of supersaturation.
  - b) Measurement of humidity.
  - c) Comparison of glass and metal as a primary packaging material.