

Total No. of Questions : 3]

SEAT No. :

PD-11031

[Total No. of Pages : 2

[6422]-1

First Year B. Pharmacy

BP 101 T : HUMAN ANATOMY AND PHYSIOLOGY - I

(Rev. 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Neat labelled diagram must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Answer the following (Any 5) :

[5 × 3 = 15]

- a) Give the structure and functions of mitochondria.
- b) Define the terms- cardiac output, blood pressure and stroke volume.
- c) What are different life processes of human body?
- d) What is blood transfusion? Mention its significance.
- e) Discuss about fixed joints with examples.
- f) Draw and explain the structure of spleen.
- g) Define Homeostasis. Enlist the components of feedback mechanism.

Q2) Answer the following (Any 2) :

[2 × 10 = 20]

- a) Classify tissue. Describe in detail about structure and function of connective tissue.
- b) Draw a neat labelled diagram of ear. Explain in detail the physiology of hearing.
- c) Classify PNS? Write down structure & functions of PNS.
- d) Define Joint. Give structural & functional classification of joints. Write a detailed note on Synovial joint?

P.T.O.

Q3) Answer the following (Any 8) :

[8 × 5 = 40]

- a) Draw and explain the structure and functions of skin.
- b) Define tissues and explain in detail about types of epithelial tissues?
- c) Give an account on physiology of taste.
- d) Define cell signalling and explain intracellular signalling pathway?
- e) Discuss the active transport mechanisms across cell membrane.
- f) Write a note on maintenance and regulation of blood pressure.
- g) Classify blood groups. Write down composition and function of blood.
- h) Write a note on lymph node.
- i) Write a note on cranial nerves.
- j) Explain the physiology of muscle contraction.



Total No. of Questions : 3]

SEAT No. :

PD-11032

[Total No. of Pages : 2

[6422]-2

F.Y. B.Pharmacy

PHARMACEUTICAL ANALYSIS - I

(Rev. 2019) (Semester - I) (BP102T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Draw well labeled diagram wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Answer the following (Any 5 out of 7) :

[15]

- a) Differentiate between Accuracy and Precision.
- b) Explain about Ilkovic equation.
- c) Give different indicators used in Redox titration.
- d) Classify complexing agents with suitable examples.
- e) How will you estimate sodium chloride using precipitation titration.
- f) Write principle of polarography.
- g) What are applications of potentiometry.

Q2) Answer the following (Any 2 out of 4) :

[20]

- a) Classify the errors in analysis and explain in detail methods to minimize the errors.
- b) Explain in detail neutralisation curves (with examples) of
Strong acid & Strong Base Titration.
Strong Base & weak Acid Titration.
- c) Discuss in detail various methods of end Point detection in precipitation titration.
- d) Explain in detail iodometry and iodimetry. Add a note on preparation and standardization of Potassium permanganate solution.

P.T.O.

Q3) Answer the following (Any 8 out of 10) :

[40]

- a) Write a note on Primary Standards and Secondary Standards
- b) Discuss theories of Acid base indicators.
- c) Solvents used in non-aqueous titrations.
- d) Explain electrodes used in Potentiometry.
- e) Describe Masking and Demasking Agents.
- f) Explain different Conductometric curves.
- g) Explain Co-precipitation and Post-precipitation in Gravimetric analysis.
- h) Give pharmaceutical applications of complexometric titrations.
- i) Write about estimation of sodium benzoate using non-aqueous titration.
- j) Write a short note on Abbe's refractometer and applications.



Total No. of Questions : 3]

SEAT No. :

PD11033

[Total No. of Pages : 2

[6422]-3

First Year B. Pharmacy

BP103T: PHARMACEUTICS - I

(Revised 2019 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*
- 4) *Do not write anything on question paper except seat number.*

Q1) Short answer questions (solve 5 out of 7). [15]

- a) Define the term Displacement value along with its formula. [3]
- b) Differentiate between Linctus and throat paint. [3]
- c) Calculate the weight percent of NaCl in a solution made by dissolving 5.2g of NaCl in 157.3g of water. [3]
- d) Define posology. Enumerate the factors affecting posology. [3]
- e) What is Ostwald Ripening? How it is addressed? [3]
- f) Define the following terms: [3]
 - i) Liniment
 - ii) Collodions
 - iii) Douches
- g) Define Gels. Classify gelling agents. [3]

Q2) Long answer questions (Solve 2 out of 4). [20]

- a) Define Ointment. Classify the types and ideal properties of ointment bases. Give the methods of preparation of Ointments. [10]
- b) What are Powders? Write its advantages and disadvantages. Classify the powders with examples. [10]
- c) Define Emulsions. Elaborate on the stability problems associated with emulsion and methods to overcome it. [10]
- d) Define dosage forms. Classify various types of dosage forms with examples and mention their advantages and disadvantages. [10]

P.T.O.

Q3) Short answer questions (Solve 8 out of 10). [40]

- a) Explain in brief Indian Pharmacopoeia. What is a monograph? Enlist the contents of a monograph. [5]
- b) Write a note on physical and therapeutic incompatibility. [5]
- c) Calculate the amount of 90% alcohol required to prepare 600ml of 25% alcohol. [5]
- d) Write a brief note on various techniques used for solubility enhancement of a drug. [5]
- e) Write a note on hygroscopic and deliquescent powders. [5]
- f) Discuss different types of suspending agents used to stabilize suspensions. [5]
- g) Define Syrup. Write the advantages, disadvantages and methods of preparation. [5]
- h) Write about evaluation of semisolid dosage forms. [5]
- i) Define and classify suspensions. Differentiate between flocculated and deflocculated suspensions. [5]
- j) Define Prescription. Explain about different parts of Prescription. [5]



Total No. of Questions : 4]

SEAT No. :

PD11034

[Total No. of Pages : 2

[6422]-4

First Year B. Pharmacy

BP-104T : PHARMACEUTICAL INORGANIC CHEMISTRY

(Revised 2019 Pattern) (Semester-I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw suitable diagram wherever necessary.*
- 4) *Do not write anything on question paper except seat number.*

Q1) Attempt any five out of seven:

[5×3=15]

- a) Enlist and describe different types of official water and official control test for water.
- b) What are Expectorants? How do they work?
- c) Give the composition and uses of ORS.
- d) Define Monograph. Explain solubility term in monograph.
- e) Give preparations and uses of boric acid.
- f) What are acid and base according to Arrhenius theory? Mention its limitations.
- g) What is an Antacid? Give ideal properties of an antacid.

Q2) Attempt any two out of four:

[2×10=20]

- a) Define limit test? Explain in detail the sources of impurities in Pharmaceuticals.
- b) Write a note on Physiological acid base balance. Give functions of major extracellular electrolytes.
- c) What is radioactivity? Explain a method for the measurement of radioactivity. Add a note on Pharmaceutical applications of radioactive substances.
- d) Explain the principle and procedure involved in the limit test of arsenic with a neat labelled diagram of Gutzeit apparatus.

P.T.O.

Q3) Attempt any eight out of ten.

[8×5=40]

- a) Give storage and handling of radiopharmaceuticals. Add a note on Sodium iodide.
- b) What is buffer action and buffer capacity?
- c) Write about Indian Pharmacopoeia.
- d) Write a note on Haematinics with example.
- e) Define Antidote. Give the preparation and assay of Sodium thiosulphate.
- f) Explain modified limit test for sulphate.
- g) Note on Acidifiers.
- h) Describe about Protectives and Adsorbents.
- i) What are desensitizing agents? Write a note on zinc-eugenol cement.
- j) Describe the methods of removing hardness of water.

* * *

Total No. of Questions : 3]

SEAT No. :

PD11035

[Total No. of Pages : 2

[6422]-5

First Year B. Pharmacy

BP 201T : HUMAN ANATOMY AND PHYSIOLOGY - II

(Revised 2019 Pattern) (Semester-II)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Draw a neat, labeled diagram wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Attempt any five of the following (Any 5 out of 7):

[5×3=15]

- a) Give composition and functions of saliva.
- b) Draw a neat and labeled diagram of nephron.
- c) Enlist functions and subdivisions of nervous system.
- d) Explain functions of large intestine.
- e) Explain different types of respiration.
- f) What is insulin? Explain its role in the regulation of blood sugar level.
- g) Write note on Basal Metabolic Rate.

Q2) Attempt any two of the following (Any 2 out of 4):

[2×10=20]

- a) Explain structure of cerebrum and different functional area of cerbrum.
- b) Explain structure of small intestine and chemical digestion in small intestine.
- c) Explain anatomy and functions of lungs.
- d) Draw a diagram and enlist organs of female reproductive system. Explain phases of menstrual cycle with its hormonal regulation.

P.T.O.

Q3) Attempt any eight of the following (Any 8 out of 10) :

[8×5=40]

- a) Describe Renin- Angiotensin-aldosterone system in detail.
- b) Explain Neuromuscular junction.
- c) Explain formation and role of ATP.
- d) Explain physiology of urine formation.
- e) Explain reflex activity of spinal cord.
- f) Explain measurement of lung volumes and capacities.
- g) Explain composition, secretion and functions of gastric juice.
- h) Write a note on ventricles of brain and cerebrospinal fluid.
- i) Explain release mechanism and functions of hormones released by pancreas.
- j) Explain the process of protein synthesis.



Total No. of Questions : 3]

SEAT No. :

PD-11036

[Total No. of Pages : 3

[6422]-6

F.Y. B.Pharmacy

PHARMACEUTICAL ORGANIC CHEMISTRY - I

(Revised 2019) (Semester - II) (BP202T)

Time : 3 Hours]

[Max. Marks : 75

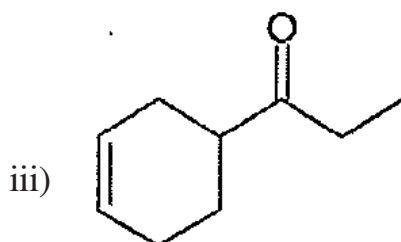
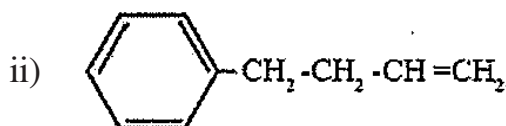
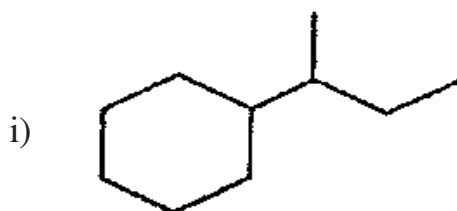
Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

Q1) Solve any five of the following :

[5 × 3 = 15]

- a) Explain the different types of intermolecular forces.
- b) Draw structures of compounds from following IUPAC names.
 - i) 3-Bromo-2-methylbutan-1-al
 - ii) 3,4-epoxyheptane
 - iii) 4-Bromo-5-methyl-2-heptyne
- c) Write IUPAC names for following structures.



P.T.O.

- d) Give structure and uses of lactic acid and tartaric acid
- e) Explain inductive effect with examples.
- f) Describe in brief about Diel's-Alder Reaction
- g) Give structure and uses of Dichloromethane and iodoform.

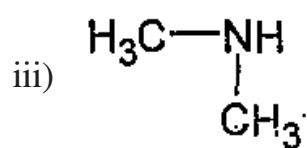
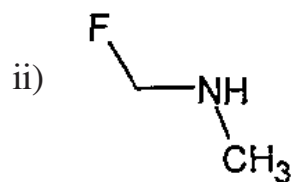
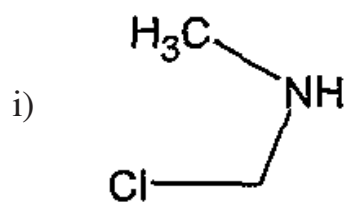
Q2) Solve any two of the following : **[2 × 10 = 20]**

- a) What are alkenes? Give stability of alkenes and two methods of preparation and two chemical reactions of Alkenes.
- b) What is Substitution nucleophilic bimolecular reaction? Illustrate with help of examples the mechanism, kinetics and stereochemistry of SN₂ reactions
- c) Classify amines and describe the reactions for separation of primary, secondary and tertiary amines
- d) Classify organic compounds on the basis of elemental composition with suitable examples. Write a note on acidity of carboxylic acids and qualitative tests for carboxylic acids and amides.

Q3) Solve any Eight of the following : **[8 × 5 = 40]**

- a) Explain the formation of ammonia and its geometry on the basis of hybridization
- b) Write a note on Perkin condensation.
- c) Draw structure and give uses of following compounds.
 - i) Chloral Hydrate
 - ii) Cinnamaldehyde
 - iii) Acetyl Salicylic acid
- d) Elaborate the effect of substituent on basicity of Aliphatic amines with examples
- e) Give the acidity order of following carboxylic acids with justification.
 - i) formic acid
 - ii) Acetic acid
 - iii) oxalic acid
- f) Describe the qualitative tests for alcohols and state the structure and uses of ethyl alcohol and glycerol.
- g) Describe Halogenation in alkanes

h) Give the basicity order of following amines with justification.



i) Explain the concept of hyperconjugation and tautomerism.



Total No. of Questions : 3]

SEAT No. :

PD-11037

[Total No. of Pages : 2

[6422]-7

F.Y. B.Pharmacy

BP203T : BIOCHEMISTRY

(2019 Rev. Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Draw a neat, labeled diagram wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Answer the following (Any 5 out of 7)

[5 × 3 = 15]

- a) Write significance of ATP and cyclic AMP.
- b) Define and classify lipids.
- c) Elaborate on disorders of pyrimidine metabolism.
- d) Define amino acids and give its functions.
- e) Define Biomolecules and give its example.
- f) Define endergonic and exergonic reaction with suitable example.
- g) Write a note on the structure of DNA.

Q2) Answer the following (Any 2 out of 4)

[2 × 10 = 20]

- a) Explain Oxidative phosphorylation and its mechanism.
- b) Describe glycogenesis and glycogenolysis metabolism in detail. Add note on glycogen storage diseases.
- c) Explain enzyme kinetics using Michaelis-Menten and Lineweaver-Burk plot.
- d) Discuss in detail transcription.

P.T.O.

Q3) Answer the following (Any 8 out of 10)

[8 × 5 = 40]

- a) Write a note on HMP shunt and its significance.
- b) Discuss Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D.
- c) Explain Therapeutic and diagnostic applications of enzymes.
- d) Explain metabolic disorders of tyrosine and phenylalanine.
- e) Describe glycolysis with its energetic.
- f) Define and classify enzyme add note on enzyme specificity.
- g) Explain relationship between free energy, enthalpy and entropy.
- h) Explain about Urea cycle.
- i) Explain Transamination and deamination.
- j) Write a short note on Catabolism of heme and hyperbilirubinemia.



Total No. of Questions : 3]

SEAT No. :

PD-11038

[Total No. of Pages : 2

[6422]-8
First Year B. Pharmacy
BP 204 T : PATHOPHYSIOLOGY
(2019 Pattern) (Semester - II) (Rev. 2019)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagram must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following. (Any 5 out of 7) :

[5 × 3 = 15]

- a) Define reversible cell injury.
- b) Give different mediators of acute inflammation.
- c) Mention the etiology of ischemic heart diseases.
- d) Enumerate the complications arising from acute renal injury.
- e) Define megaloblastic anaemia.
- f) Give the signs and symptoms of hypothyroidism.
- g) Define depression. What are its different types?

Q2) Long Answer. (Any 2 out of 4) :

[2 × 10 = 20]

- a) Discuss the complete pathophysiology of asthma.
- b) Explain the complete pathophysiology of inflammatory bowel disease.
- c) Give the etiology, symptoms and pathogenesis of gout.
- d) Outline the types and explain in detail pathophysiology of cancer.

P.T.O.

Q3) Short Answer. (Any 8 out of 10) :

[8 × 5 = 40]

- a) Explain basic mechanism involved in the process of chronic inflammation?
- b) Give types of shock. Explain mechanisms, stages and management of shock.
- c) What are the various cellular events in acute inflammation?
- d) Write causative organism and clinical manifestation of UTI.
- e) Write the causes, signs and symptoms of alzheimer's disease.
- f) Define sickle cell anemia and thalassemia.
- g) Explain factors influencing wound healing?
- h) Write causative organism, pathogenesis and clinical manifestation of pneumonia.
- i) What are the different idiopathic causes of cellular injury?
- j) Explain etiology and pathogenesis of amenorrhea.



Total No. of Questions : 3]

SEAT No. :

PD-2863

[Total No. of Pages : 2

[6422]-124

F.Y. B.Pharmacy

BP101T : HUMAN ANATOMY AND PHYSIOLOGY - I

(Revised 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Objective Type Questions (Answer 5 out of 7) :

[5 × 3 = 15]

- a) Draw the internal structure of skin.
- b) Define and classify joints.
- c) Write the functions of blood.
- d) Write the structure and functions of artery.
- e) Define transfusion and its significance.
- f) Draw the structure of nose.
- g) Write classification of tissues. Explain the functions of connective tissue.

Q2) Long Answers (Answer 2 out of 4) :

[2 × 10 = 20]

- a) Explain the structure of nucleus. Describe in detail protein synthesis.
- b) Write functions of skeletal system. Describe in detail sliding filament mechanism.
- c) Define blood pressure. Enlist the factors affecting blood pressure. Explain the hormonal regulation of blood
- d) Draw a neat-labelled diagram of plasma membrane. Describe in detail transport across cell membrane.

P.T.O.

Q3) Short Answers (Answer 8 out of 10) :

[8 × 5 = 40]

- a) Explain the Positive Feedback System.
- b) Write a note on lymphatic node.
- c) Difference between sympathetic and parasympathetic nervous system.
- d) Add note on blood groups.
- e) Describe active transport mechanism.
- f) Explain Conduction system of Heart.
- g) Write the Composition of Blood.
- h) Explain the Nervous tissue.
- i) Explain the structure and functions of erythrocytes.
- j) Write note on tongue.



Total No. of Questions : 3]

SEAT No. :

PD-2878

[Total No. of Pages : 2

[6422]-125

F.Y. B.Pharmacy

BP102T : PHARMACEUTICAL ANALYSIS - I

(Rev. 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Objective Type Questions Any 5 out of 7 :

[5 × 3 = 15]

- a) Explain the term Molarity and Normality.
- b) Explain Non Aqueous solvents.
- c) Write the principle and reaction for assay of sodium benzoate assay.
- d) Give the preparation and standardization for 0.1 M silver nitrate.
- e) Explain principle involved in Polagraphy.
- f) Explain universal and mixed indicators.
- g) Discuss measurement of Refractive index.

Q2) Long Answer Any 2 out of 4 :

[2 × 10 = 20]

- a) What are neutralization titrations? Explain endpoint determination in acid - base titration.
- b) Discuss in detail unit operations in gravimetry. Add note on applications.
- c) Explain Ilkovic equation and discuss the factors affecting current.
- d) Explain Conductance and factors affecting conductance. Describe conductivity cell.

P.T.O.

Q3) Short Answer Any 8 out of 10 :

[8 × 5 = 40]

- a) Explain Mohr's method
- b) Write note on Abbe's Refractometer.
- c) Explain Calomel electrode.
- d) Explain types of Errors
- e) Write note Iodine titrations
- f) Explain principle involved in potentiometry.
- g) Explain accuracy and precision.
- h) Give detail about titration performed by conductometry.
- i) Give applications of potentiometry.
- j) Discuss masking and demasking in complexometric titration.



Total No. of Questions : 3]

SEAT No. :

PD-2879

[Total No. of Pages : 2

[6422]-126

F.Y. B.Pharmacy

BP - 103 T : PHARMACEUTICS - I

(Rev. 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

Q1) Answer any FIVE :

[5 × 3 = 15]

- a) Define syrup and give any two types of syrups along with examples.
- b) State True or False :
 - i) In the United States, the first Pharmacopoeia was published in 1920:_____
 - ii) The patient's information helps to decide the dosage of drug:_____
 - iii) The complexation of drug can increase the solubility : _____
- c) Comment on displacement value.
- d) Define emulsion and give the ideal properties of emulsifying agents.
- e) Fill in the blanks :
 - i) Any strength below proof strength is called as _____
 - ii) The loose, fluffy aggregates are called as _____
 - iii) Liniments should be applied _____
- f) Classify semisolid dosage forms along with examples.
- g) Multiple Choice Questions :
 - i) The Pharmaceutical liquid are _____.
A) Single Phase preparation B) Biphasic preparation
C) Both (A) and (B) D) None of these
 - ii) The alcohol considered as 100 volumes of proof spirit is : _____
A) 56.1 % volume B) 50% volume
C) 57.1 % volume D) 100% volume
 - iii) Emulsions are : _____.
A) Turbid B) Opaque
C) Clear D) Both (A) and (B)

P.T.O.

Q2) Answer any TWO :

[2 × 10 = 20]

- a) Write a note on Pastes and differentiate between Paste and Ointment.
- b) Define Suppositories. Give various evaluation tests for Suppositories. Comment on stability problems of Suppository.
- c) Explain in details the formulation aspects of Suspension.
- d) Explain in detail the various methods to improve the solubility of poor water soluble drugs.

Q3) Solve any EIGHT :

[8 × 5 = 40]

- a) Classify dosage forms on the basis of physical states and route of administration with suitable examples.
- b) Explain the history of Indian Pharmacopoeia.
- c) What is meant by error in prescription? Give note on medication error.
- d) A 25 mg of a drug can be given to an adult. What will be the dose of the drug for:
 - i) A child of 4 years.
 - ii) 9 months old infant.
- e) Describe the powders used for external use.
- f) Define and classify syrups. Explain any two methods for preparation of syrup.
- g) Calculate the real strength of 30°OP and 40°UP.
- h) Write a short note on lotions.
- i) Explain what is meant by therapeutic incompatibility in details.
- j) Discuss the identification tests for Emulsion.



Total No. of Questions : 3]

SEAT No. :

PD-2880

[Total No. of Pages : 2

[6422]-127

F.Y.B.Pharmacy

BP 104 T : Pharmaceutical Inorganic Chemistry
(Pattern 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory*
- 2) *Figures to right indicate full marks*
- 3) *Draw the figures whenever necessary*

Q1) Solve any five out of seven:

[5 × 3 = 15]

- a) Define monograph. Explain the points covered in monograph.
- b) What is role of fluoride in the treatment of dental caries?
- c) Define antacids. Write a note on use of aluminium hydroxide gel.
- d) Which ions are categorized as major extra cellular ions? Add a note on sodium chloride.
- e) Define Buffer and buffer capacity.
- f) Explain the role of Ammonium Chloride.
- g) Define radiopharmaceuticals, radio-isotopes and half-life of radio-pharmaceuticals.

Q2) Answer any two out of four:

[2 × 10 = 20]

- a) Discuss the various methods employed in adjustment of isotonicity in detail.
- b) What are limit tests? Why they are performed? Discuss in detail about limit test for chloride.
- c) Name the compounds of Al and Mg used as antacid. Add a note on Magnesium Hydroxide Mixture and combinations of antacids.
- d) Define Haematinics. Give the preparation, properties, assay and uses of Copper sulphate.

P.T.O.

Q3) Answer any eight out of ten :

[8 × 5 = 40]

- a) Write a note on United States Pharmacopoeia.
- b) Discuss about various sources of impurities found in Pharmaceutical substances.
- c) Define antimicrobial agents. Discuss the preparation, properties, assay and uses of Chlorinated lime.
- d) What are Protectives and Adsorbents? Write a note on properties, storage and uses of Kaolin.
- e) Write a brief account of combination antacid therapy.
- f) Write a note on Electrolytes used in the replacement therapy.
- g) Write various applications of radiopharmaceuticals.
- h) Comment on different physiological buffers.
- i) Discuss the important functions of chloride and bicarbonate ions.
- j) Define expectorants. Add a note on Potassium iodide.



Total No. of Questions : 3]

SEAT No. :

PD-5710

[Total No. of Pages : 2

[6422]-128

F.Y. B.Pharmacy

BP201T : HUMAN ANATOMY AND PHYSIOLOGY - II

(Rev. 2019 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw a neat, labeled diagram wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt any five of the followings: (Any 5 out of 7) [5 × 3 = 15]

- a) Draw labeled diagram of male reproductive system.
- b) Give structural and functional classification of neurons along with their features.
- c) Define hormone. Classify endocrine glands and their hormones.
- d) Give composition and functions of saliva.
- e) Define dwarfism and gigantism.
- f) Explain genetic pattern of inheritance.
- g) Draw a neat and labeled diagram of nephron.

Q2) Attempt any two of the followings: (Any 2 out of 4) [2 × 10 = 20]

- a) Draw neat labelled diagram of human kidney. Explain structure and functions of kidney. Describe in detail physiology of urine formation.
- b) Explain position, structure and functions of stomach.
- c) Explain structural and functional features of parts of the brain stem.
- d) Compare various phases of menstrual cycle along with its hormonal regulation.

P.T.O.

Q3) Attempt any eight of the followings: (Any 8 out of 10) [8 × 5 = 40]

- a) Discuss in detail spermatogenesis process.
- b) Explain basic structure of tooth and different types and functions of teeth.
- c) Explain structure and functions of neuroglia.
- d) Describe the regulation and actions of anterior pituitary hormones.
- e) Explain the role of kidney to regulate acid-base balance.
- f) Write in detail about pancreatic hormones.
- g) Write a note on protein synthesis.
- h) Explain different meninges of brain.
- i) List out the organs of female reproductive system and write the structure of uterus.
- j) Explain in detail functions of liver.



Total No. of Questions : 3]

SEAT No. :

PD-5711

[Total No. of Pages : 3

[6422]-129

F.Y. B.Pharmacy

PHARMACEUTICAL ORGANIC CHEMISTRY - I

(Rev. 2019 Pattern) (Semester - II) (BP202T)

Time : 3 Hours]

[Max. Marks : 75

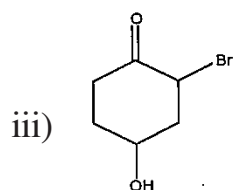
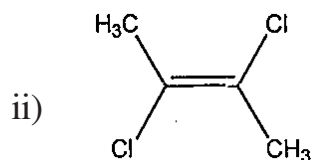
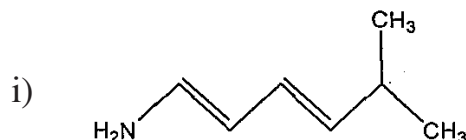
Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Draw a neat, labeled diagram wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Solve any five of the following:

[5 × 3 = 15]

- a) Explain Hybridization of atomic orbitals of carbon
- b) Hoffmann Elimination mechanism and give its application in synthesis of alkenes
- c) What is ozonolysis? Give its application
- d) Draw structures of compounds from following IUPAC names.
 - i) 2-chloroethanoic acid
 - ii) Cyclohexanecarboxylic acid
 - iii) 3-Chloro-2-butanone
- e) Write IUPAC names for following structures.



P.T.O.

- d) Give structure and uses of methyl salicylate and ethanolamine
- e) Explain concept of resonance effect with examples.
- f) Explain types of bonds, bond fission in organic compounds.
- g) Classify Compounds containing carbon, hydrogen and nitrogen atoms only with examples.

Q2) Solve any two of the following:

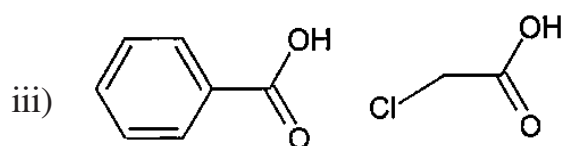
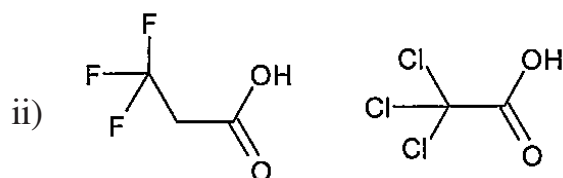
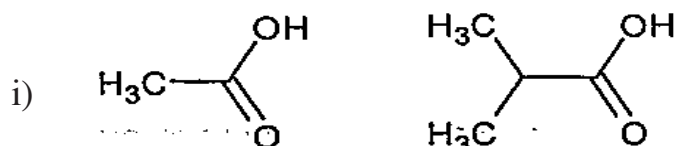
[2 × 10 = 20]

- a) Explain atomic hybridisation and classify it. Describe how ammonia forms and its geometry using hybridisation.
- b) Classify carbonyl compounds and explain any three methods of preparation and any three nucleophilic addition reactions of aldehydes.
- c) What are elimination reactions? Explain Mechanism, stereochemistry of E1 & E2 reactions. Compare them
- d) Describe SN1 and SN2 reactions of alkyl halides, give mechanism with evidence.

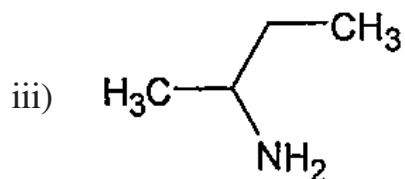
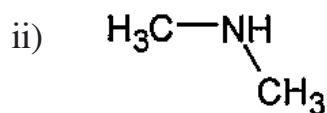
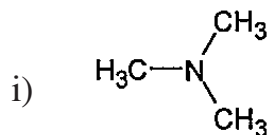
Q3) Attempt any eight of the followings :

[8 × 5 = 40]

- a) State with reason which acid of the following pairs is a stronger acid.



b) Give the basicity order of following amines with justification.



- c) Illustrate chemical properties of alcohols. Give any two reactions of alcohols with proper examples.
- d) Discuss free radical addition reactions of alkenes with examples explaining the rules governing it.
- e) Discuss inductive and resonance effect
- f) Explain conjugated dienes and their stability. Elaborate on 1,2-electrophilic addition reaction.
- g) Draw structure and give uses of following compounds.
- i) Lactic acid
 - ii) Vanillin
 - iii) Paraldehyde
- h) Explain in detail Cannizzaro and Cross Cannizzaro reaction of aldehydes
- i) Discuss the qualitative tests for amides and esters



Total No. of Questions : 3]

SEAT No. :

PD5712

[Total No. of Pages : 2

[6422]-130
First Year B.Pharmacy
BIOCHEMISTRY
(Revised 2019 Pattern) (Semester - II) (BP203T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right side indicate full marks.*
- 3) Draw well labeled diagram wherever necessary.*

Q1) Answer the following (any 5 out of 7) (3 marks each)

[15]

- a) Define and classify amino acid based on their structure.
- b) Give energetic involved in Krebs cycle.
- c) Differentiate between oxidative phosphorylation and substrate phosphorylation.
- d) Explain Fatty liver.
- e) Describe biosynthesis of catecholamines.
- f) Draw structure of glucose. Give biological role of glucose.
- g) Define lipid. Give biological functions of lipids.

Q2) Long Answer (any 2 out of 3) (10 marks each)

[20]

- a) Explain HMP pathway and give its significance.
- b) Explain beta oxidation of fatty acid.
- c) Explain process of translation in detail.
- d) Describe glycogen metabolism in detail. Add a note on GSDs.

P.T.O.

Q3) Short Answer (any 8 out of 10) (5 marks each)

[40]

- a) Define and classify enzymes. Add a note on coenzymes.
- b) Explain ketogenesis and its utilization.
- c) Write a note on hormonal regulation of glucose and diabetes mellitus.
- d) Explain concept of free energy.
- e) Describe glycolysis with its energetic.
- f) Explain urea cycle in detail.
- g) Explain enzyme inhibition.
- h) Write a note on structure of DNA.
- i) Explain biosynthesis of purines.
- j) Give therapeutic and diagnostic applications of enzymes.

x x x

Total No. of Questions : 3]

SEAT No. :

PD5713

[6422]-131

[Total No. of Pages : 2

F.Y.B. Pharmacy
PATHOPHYSIOLOGY
BP-204-T : Original Copy
(Revised 2019 Pattern) (Semester-II)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labeled diagram must be drawn wherever necessary.*
- 3) Figure to the right indicate full marks.*

Q1) Answer the following.(Any 5 out of 7):

[5×3=15]

- a) Enumerate the cell-derived mediators of inflammation.
- b) Define apoptosis.
- c) What are the life style changes to prevent ischemic heart disease?
- d) What are the complications of atherosclerosis?
- e) Enlist the types of acute renal failure.
- f) What is thalassemia?
- g) What are the signs and symptoms of anaemia?

Q2) Long Answer.(Any 2 out of 4):

[2×10=20]

- a) Describe the classification and pathophysiology of hypertension, comment on nonpharmacological measures to control hypertension.
- b) Describe the pathophysiology and complications of chronic renal failure.
- c) Describe the pathophysiology of cancer.
- d) Define and classify hepatitis. Discuss in detail pathophysiology of hepatitis B.

P.T.O.

Q3) Short Answer. (Any 8 out of 10):

[8×5=40]

- a) Explain autoimmunity with example.
- b) Explain the etiology, Pathogenesis and clinical manifestation of cirrhosis.
- c) Explain pathogenesis and treatment of inflammatory bowel disease.
- d) Explain the causes, pathogenesis and treatment of schizophrenia.
- e) Explain the causes, clinical manifestations and treatment of depression.
- f) Write causes and pathogenesis of dysentery.
- g) Define epilepsy. Classify the various types of epilepsy, with their signs and symptoms.
- h) What are metabolic disorders? Explain the pathogenesis of diabetes mellitus.
- i) Describe the pathophysiology of peptic ulcer.
- j) Discuss secondary hypertension in detail.



Total No. of Questions : 3]

SEAT No. :

[Total No. of Pages : 2

PD5169

[6422]-132

Second Year B.Pharmacy

BP-301T: PHARMACEUTICAL ORGANIC CHEMISTRY - II
(2019 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory. Internal choices are given.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw neat diagrams and structures wherever necessary.*

Q1) Objective Type Questions. (Answer 5 out of 7)

[5×3=15]

- a) Explain Huckel's rule for aromaticity.
- b) Explain acidity of Phenols.
- c) Give reason: Aromatic amines are weaker base than ammonia and aliphatic amines.
- d) Define enantiomers and diastereomers with suitable example
- e) Define and classify Polynuclear Aromatic Hydrocarbons with suitable examples.
- f) Comment on Sandmeyer's reaction
- g) Explain rancidity in fats and oils.

Q2) Long Answer (Answer 2 out of 4)

[2×10=20]

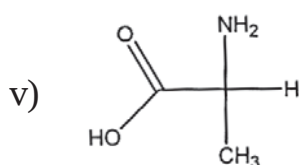
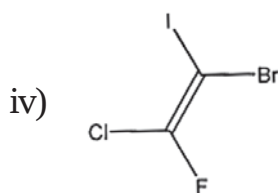
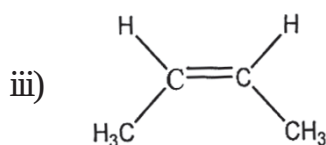
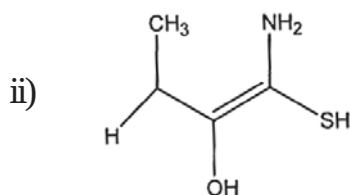
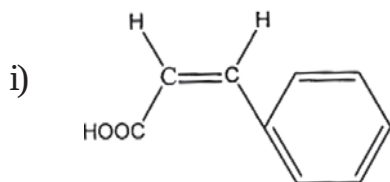
- a) Explain in detail Orbital Picture, Kekule's structure and resonance in Benzene.
- b) Explain in detail various elements of symmetry in molecule.
- c) Explain in detail Bayer's strain theory. Comment on its advantages and limitations
- d) Give synthesis, reactions and medicinal uses of Anthracene.

P.T.O.

Q3) Short Answer (Answer 8 out of 10)

[8×5=40]

- a) How will you convert:
- Phenol to phenolphthalein
 - Phenol to Salicylaldehyde
- b) What is diazotization? Discuss synthetic applications of Diazonium salts.
- c) Assign configurations to the following:



- d) Explain Haworth synthesis for Naphthalene
- e) Differentiate between fats and Oils. Explain reactions of fats and oils.
- f) Explain Resonance theory of o,p-directive effect giving suitable example.
- g) Give reactions of cyclopropane and cyclobutane.
- h) What are Optical isomers? Comment on D and L system of nomenclature of optical isomers.
- i) Explain about Coulson and Moffitt's modification of cycloalkanes.
- j) Describe Friedel-Crafts alkylation for benzene along with mechanism. What are its limitations.



Total No. of Questions : 3]

SEAT No. :

PD5170

[Total No. of Pages : 2

[6422]-133

Second Year B. Pharmacy

BP302T : PHYSICAL PHARMACEUTICS-I

(2019 Pattern) (Semester-III)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw suitable diagrams wherever necessary.*
- 4) *Do not write anything on question paper except seat number.*

Q1) Objective Type Questions. (Answer 5 out of 7)

[5×3=15]

- a) Define polymorphism & Pseudopolymorphism. Explain the different types of Polymorphism, and the various detection techniques in detail.
- b) How aerosols are working? Classify aerosols, add about advantages and disadvantages of aerosols.
- c) Recall various solubility terms, write their significance in pharmacy.
- d) How complexes are important? Explain solubility method and pH titration method of complex analysis in detail.
- e) State the phenomena of wetting and detergency.
- f) Summarize HLB values using suitable diagram, mentioning their significance.
- g) Explain Eutectic mixtures with suitable example.

Q2) Long Answers (Answer 2 out of 4)

[2×10=20]

- a) Define Surface tension. Explain the principle involved in determination of Surface Tension by the capillary rise method. Give its limitations.
- b) Define solubility. Explain the various factors affecting the solubility of drugs in solids, liquids & gases.
- c) Explain Gibb's phase rule. Explain 2-component system using phase diagrams.
- d) Define and derive Raoult's law. Explain in detail the positive and negative deviations of Raoult's law along with its applications and limitations.

P.T.O.

Q3) Short Answers (Answer 8 out of 10)

[8×5=40]

- a) Interpret the phase diagram of the phenol water system.
- b) Justify the principle of liquefied propellant systems in aerosols.
- c) List and explain applications of dissociation constants in pharmacy.
- d) Illustrate glass transition temperature.
- e) Explain Freundlich & Langmuir's adsorption isotherms.
- f) List and explain in brief, significance of biological buffers.
- g) Name and describe factors affecting the solubility of gases in liquids.
- h) Elaborate on colligative properties.
- i) State & explain Nernst Distribution Law along with its limitations.
- j) Comment on Immersion refractometer.



Total No. of Questions : 3]

SEAT No. :

PD5171

[Total No. of Pages : 2

[6422]-134

S.Y. B. Pharmacy

BP 303T: PHARMACEUTICAL MICROBIOLOGY

(2019 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat diagram must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following (any five)

[5×3=15]

- a) Explain “Whittaker’s five kingdom concept”.
- b) Define:
 - i) D value
 - ii) F value
- c) Give the classification of viruses.
- d) Explain importance of fungi.
- e) Enlist factors affecting microbial spoilage.
- f) Give ideal properties of disinfectant.
- g) Define probiotic and give its examples.

Q2) Answer the following (any two)

[2×10=20]

- a) Discuss different sources of contamination in an aseptic area and methods of its prevention.
- b) Discuss different methods of assessment of microbial contamination and spoilage.
- c) Write in detail identification of bacteria by staining technique.
- d) Discuss the lytic and lysogenic cycle of bacteriophage.

P.T.O.

Q3) Answer the following (any eight)

[8×5=40]

- a) Write a note on MLT.
- b) Write a note on dark field microscopy.
- c) Explain growth curve of bacteria.
- d) Write a note on autoclave.
- e) Discuss different methods of cultivation of human viruses.
- f) Write a note on laminar airflow equipment.
- g) Discuss the applications of cell culture in pharmaceutical industry and research.
- h) Discuss various physical parameters required for growth of bacteria.
- i) Write a note on culture media.
- j) Write a note on sterility indicators.



Total No. of Questions : 3]

SEAT No. :

PD-5172

[Total No. of Pages : 2

[6422]-135
S.Y. B. PHARMACY
Pharmaceutical Engineering
(2019 Pattern) (Semester - III) (BP304T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidate:

- 1) All questions are compulsory.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Attempt any FIVE of the following :

[15]

- a) State Kirchoff's law and Stefan Boltzmann law regarding radiation heat transfer.
- b) Define wet bulb temperature, dry bulb temperature and critical moisture content.
- c) Draw a neat labeled diagram of a multiple-effect evaporator.
- d) State the principle of molecular distillation.
- e) State the names of various types of equipment used for liquid-liquid mixing.
- f) How efficiency of a packed column is calculated?
- g) Define Corrosion. What do you mean by Galvanic corrosion?

P.T.O.

Q2) Attempt any TWO of the following :

[20]

- a) Explain McCabe Thiele's method of calculating the number of theoretical plates.
- b) Describe various phases of a drying curve with the help of diagram.
- c) What are heat exchangers? Explain any two types of heat exchangers.
- d) Write a note on the theory of filtration. Describe various factors affecting the rate of filtration.

Q3) Attempt any EIGHT of the following :

[40]

- a) Explain Bernoulli's theorem applied to the flow of fluids.
- b) Write a note on the rotary drum dryer.
- c) Explain the ball mill.
- d) Describe the rotary basket centrifuge.
- e) Explain the cyclone separator.
- f) Write a note on factors affecting the selection of materials for pharmaceutical plant construction.
- g) Describe: Filter aids with suitable examples.
- h) Write a short note on simple manometer.
- i) Explain azeotropic distillation with its applications.
- j) Explain Venturimeter.



Total No. of Questions : 3]

SEAT No. :

PD5173

[Total No. of Pages : 2

[6422]-136

S.Y.B. (Pharmacy)

BP 401 T : PHARMACEUTICAL ORGANIC CHEMISTRY - III
(2019 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Write reactions wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Objective Type Questions Any 5 out of 7.

[5×3=15]

- a) Discuss about Asymmetric synthesis.
- b) Explain basic and acidic character of pyrrole.
- c) Write two methods for synthesis of Acridine.
- d) Draw the structure of Azepine derivatives and give its medicinal uses.
- e) Discuss any three reactions of thiophene.
- f) Draw the following heterocycles with numbering
 - i) Pyrimidine
 - ii) Oxazole
 - iii) Benzimidazole
- g) Elaborate on stereospecific and stereoselective reactions.

Q2) Long Answer Any 2 out of 4.

[2×10=20]

- a) Discuss method of synthesis, reactions and medicinal uses of Thiazole.
- b) Elaborate on racemic modification and resolution of racemic mixture.
- c) Discuss reaction, mechanism and applications of Beckmann's rearrangement and Benzilic acid rearrangement reaction.
- d) Discuss in detail the conformational isomerism in cyclohexane.

P.T.O.

Q3) Short Answer Any 8 out of 10

[8×5=40]

- a) Describe methods for synthesis, reactions and medicinal applications of Furan.
- b) Elaborate on Conformational isomerism in n-butane.
- c) Discuss Atropisomerism with examples.
- d) Explain mechanism involved in Claisen-Schmidt condensation.
- e) Discuss synthesis and medicinal use of Purine.
- f) Explain in detail Oppenauer-oxidation.
- g) Describe methods for synthesis, reactions and medicinal applications of Indole.
- h) Discuss reaction, mechanism and applications of Pinacol-Pinacolone rearrangement.
- i) Discuss synthesis and medicinal use of Isoquinoline.
- j) Explain in detail about Dakin reaction.

* * *

Total No. of Questions : 3]

SEAT No. :

PD5174

[Total No. of Pages : 2

[6422]-137

Second Year B. Pharmacy

BP 402 T : MEDICINAL CHEMISTRY - I

(2019 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*

Q1) Answer any five questions out of seven questions.

[5×3=15]

- a) Define metabolism and enlist factors affecting metabolism.
- b) Explain Beta blockers with examples.
- c) Define Sedative and hypnotics and classify them with examples
- d) Sketch out synthetic route, MOA and uses of Ibuprofen.
- e) Discuss inhalation type of general anesthetics.
- f) Classify anticonvulsants with examples..
- g) Explain short role of Hydrogen bonding in drug receptor interaction.

Q2) Answer any two questions out of four questions.

[2×10=20]

- a) Give the classification of sympathomimetic agents. Explain in detail the chemistry of Indirect acting and mixed action Sympathomimetics with suitable examples. Draw synthesis of Phenylephrine.
- b) Classify antipsychotic agents. Elaborate in detail phenothiazine derivatives as antipsychotics. Outline the synthesis of chlorpromazine.
- c) Define and Classify parasympathomimetic agent with example. Discuss in detail chemistry, SAR, MOA and uses Cholinesterase inhibitors.
- d) Define anti-inflammatory agents. Elaborate on chemistry, Structure Activity Relationship (SAR), MOA and uses of indole acetic acid and N-aryl anthranilic acid derivatives as anti-inflammatory agents. Draw synthesis of Mefenamic acid.

P.T.O.

Q3) Answer any eight questions out of ten questions.

[8×5=40]

- a) Write a note on bioisosterism.
- b) Discuss in detail role of physicochemical properties in drug action.
- c) Write a note on opioid antagonists
- d) Write structure and mode of action of Cholinergic drugs used to treat Alzheimer's disease.
- e) Discuss chemistry, MOA and uses of Atenolol and Carvedilol.
- f) Define alpha adrenergic blockers. Write down chemistry, MOA and uses of any one alpha adrenergic receptor blocker.
- g) Write note on NSAIDs.
- h) Discuss chemistry, MOA and uses of Benzodiazepines.
- i) Enlist MOA and therapeutic uses of irreversible AChE Inhibitors with examples.
- j) Give detail account on chemistry, MOA and uses of Atropine sulphate and Ipratropium bromide.



Total No. of Questions : 3]

SEAT No. :

PD5175

[Total No. of Pages : 2

[6422]-138

S.Y. B. Pharmacy

BP 403T : PHYSICAL PHARMACEUTICS - II

(2019 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Neat labeled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Answer all the questions (Any 5 out of 7)

[5×3=15]

- a) Enlist applications of rheology.
- b) Write application of chemical kinetics study for API.
- c) Explain “Anderson pipette method”.
- d) When methylcellulose is added to water, the viscosity increases? Why?
- e) Write in short about kinetic properties of colloids.
- f) How to develop formulation by HLB consideration?
- g) Write note on “Coulter counter apparatus”.

Q2) Long Answer (Any 2 out of 4):

[2×10=20]

- a) What are suspensions? Describe formulation of suspensions. Add notes on theory of sedimentation.
- b) Classify viscometer and explain principle, working and applications of Ostwald viscometer and Cup and Bob viscometer.
- c) Explain the objectives, procedure and limitations of accelerated stability studies.
- d) What are first and second order reactions. Discuss methods used for determining the order of reaction.

P.T.O.

Q3) Short Answers (Any 8 out of 10)

[8×5=40]

- a) Explain deformation of solids.
- b) Explain different degradation pathways for drug substance.
- c) Explain method to determine powder surface area.
- d) Write a note on Kinetics and Optical properties of Colloids.
- e) Elaborate significance of Nernst and Zeta potential in dispersions.
- f) Elaborate the methods of purification of colloids.
- g) Define true density, bulk density and porosity of powders.
- h) Differentiate colloidal and coarse dispersion.
- i) What is Kraft and Cloud point?
- j) Discuss the application of Micromeritics.



Total No. of Questions : 3]

SEAT No. :

PD5176

[Total No. of Pages : 2

[6422]-139

S.Y.B.Pharmacy

BP-404T: PHARMACOLOGY - I

(2019 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Objectives Type Questions. (Answer 5 out of 7)

[5×3=15]

- a) Define and classify sedatives with examples.
- b) Write two uses of MAOI.
- c) Define hypnotics and give two examples.
- d) What is drug dependence? Give an example.
- e) Define drug interactions and give one example.
- f) Define tachyphylaxis and give two examples.
- g) Explain enzyme inhibition with an example.

Q2) Long Answers (Any 2 out of 4)

[2×10=20]

- a) Define and classify adverse drug reactions with examples. Write a note on pharmacovigilance.
- b) Describe the pharmacology of alcohol. Add a note on disulfiram and its effects.
- c) Define drug absorption, describe the mechanisms and factors affecting it.
- d) Define and classify receptors. Describe GPCR and signal transduction.

P.T.O.

Q3) Short Answers (Any 8 out of 10)

[8×5=40]

- a) Classify antiepileptic drugs and describe the uses and ADR of valproic acid.
- b) Define and classify antipsychotic drugs. Write the uses, MOA, and ADR of chlorpromazine.
- c) Define and classify general anesthetics. Write a note on stages of anesthesia.
- d) Enumerate opioid analgesics. Describe the uses and adverse effects of morphine.
- e) Explain pharmacokinetic terms bioavailability and half-life.
- f) Classify various drugs used for Parkinson's disease. Explain why levodopa is combined with carbidopa.
- g) Define drug distribution and write factors affecting it. Add a note on volume of distribution.
- h) Discuss the rational use of medicines and rational drug prescribing.
- i) Define and classify drug antagonism with examples.
- j) Describe the synthesis, storage, release, and termination of noradrenaline. Discuss the clinical uses of beta-blockers.



Total No. of Questions : 3]

SEAT No. :

PD-5177

[Total No. of Pages : 2

[6422]-140

S.Y.B. Pharmacy

BP - 405 T : PHARMACOGNOSY AND PHYTOCHEMISTRY - I
(2019 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) *All the questions are compulsory.*
- 2) *Neat labeled diagrams must be drawn whenever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Objective type questions (Answer 5 out of 7)

[5 × 3 = 15]

- a) What are proteins and enzymes? Add a note on their applications.
- b) Explain Biological source and therapeutic uses of bromelain.
- c) Write different chem. tests for Castor oil.
- d) Write a note on Auxins.
- e) Explain chemical Test for Volatile oil.
- f) Describe leaf anatomy with a neat diagram.
- g) Define and classify different types of stomata.

Q2) Answer the following (Any 2 out of 4) :

[2 × 10 = 20]

- a) Give historical development of Plant Tissue Culture. Classify and explain various types of cultures.
- b) Define Pharmacognosy and explain history, scope and development of Pharmacognosy.
- c) Describe in detail Factors influencing cultivation of medicinal plants.
- d) Define and classify lipids, Describe extraction of shark liver oil and cod liver oil.

P.T.O.

Q3) Answer the following (Any 8 out of 10) :

[8 × 5 = 40]

- a) Enlist plant hormones with their applications.
- b) Describe general nutrition requirement of plant tissue culture.
- c) Classify various marine drug and explain antineoplastic drugs from marine source.
- d) Write a note on various methods of adulteration.
- e) Explain in detail Hybridization and polyploidy technique of medicinal plants.
- f) Define and classify Carbohydrate with examples.
- g) Write a note on conservation of medicinal plants.
- h) Define and explain classification of crude drugs.
- i) Explain chem. test for cardiac glycosides and Anthraquinone glycosides.
- j) Describe general anatomy and morphology of subterranean organs.



Total No. of Questions : 3]

SEAT No. :

PD5178

[Total No. of Pages : 2

[6422]-141

T.Y. B.Pharmacy

BP-501T: MEDICINAL CHEMISTRY - II

(2019 Pattern) (Semester - V) (Theory)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*
- 4) *Do not write anything on the question paper except seat number.*

Q1) Attempt the following. (Any five)

[5×3=15]

- a) Define anti-arrhythmic agents, Classify anti-arrhythmic agents with examples.
- b) Explain mechanism of action and medicinal applications of proton pump inhibitors with examples.
- c) Write a note on second generation H₁ receptor antagonist.
- d) Write mechanism of action and medicinal applications of Sildenafil.
- e) Classify antidiabetic agents with examples.
- f) Define Diuretics, Classify diuretic agents with examples.
- g) Define local anesthetic. Classify local anesthetic agents with examples.

Q2) Attempt the following. (Any two)

[2×10=20]

- a) Define autocoids. Write biosynthesis, nomenclature and medicinal applications of prostaglandins.
- b) Classify antihypertensive agents with examples, write mechanism of action and medicinal applications of Angiotensin II receptor antagonists and angiotensin converting enzyme inhibitors.
- c) Write symptoms and causes of angina pectoris. Classify anti-anginal agents with examples, write mechanism of action and medicinal applications of vasodilators.
- d) Explain the term Hyperlipidemia, Write mechanism of action, medicinal applications, adverse effects and examples of HMG Co-A reductase inhibitors.

P.T.O.

Q3) Attempt the following. (Any eight)

[8×5=40]

- a) Write mechanism of action, medicinal applications and synthesis of Cetirizine.
- b) Write mechanism of action, medicinal applications and synthesis of Tolbutamide.
- c) Write mechanism of action, medicinal applications and synthesis of Furosemide.
- d) Draw structure, write mechanism of action and medicinal applications of Amlodipine.
- e) Draw structure, write mechanism of action and medicinal applications of Ranitidine.
- f) Draw structure, write mechanism of action and medicinal applications of Chlorthiazide.
- g) Write mechanism of action and medicinal applications of Warfarin and propyl thiouracil.
- h) Write a note on drugs used in Congestive heart failure.
- i) Write mechanism of action and medicinal applications of Spironolactone and Reserpine.
- j) Write a note on endogenous estrogens.



Total No. of Questions : 3]

SEAT No. :

[Total No. of Pages : 2

PD5179

[6422]-142

Third Year B. Pharmacy

**BP 502T : PHARMACEUTICS (INDUSTRIAL PHARMACY-I)
(2019 Pattern) (Semester-V)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat, labeled diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Long Answers (Any 2)

[2×10=20]

- a) Discuss in detail formulation of empty hard gelatin capsule shells; elaborate the additives used in hard gelatin capsules. Explain the principle of dosator in capsule filling.
- b) What is the need of tablet coating. Explain film coating in detail and tablet defects associated with coating operation.
- c) Define granulation. Explain wet granulation in detail. Write about high shear granulators.
- d) Give advantages of parenterals. Discuss formulation and evaluation of Large Volume Parenterals in detail.

Q2) Short Answers (Any 8)

[8×5=40]

- a) Add a note on small volume parenterals.
- b) Differentiate between flocculated and deflocculated suspension.
- c) Elaborate disintegration test apparatus as per IP.
- d) Write a note on evaluation of aerosol.

P.T.O.

- e) Explain in brief soft gelatin capsules.
- f) Explain in detail sugar coating process.
- g) Explain in brief formulation aspects of sunscreens.
- h) Write a note on friability test.
- i) Add a brief note on Pharmaceutical pellets.
- j) Add a note on emulsifying agents.

Q3) Short Answers (Any 5)

[5×3=15]

- a) Give significance of preformulation in dosage form development
- b) Add a note on syrup
- c) What is HLB? Give its significance in biphasic dosage form
- d) What is pyrogen test?
- e) Explain propellants used in aerosols
- f) Give significance of plasticizer in capsule dosage form



Total No. of Questions : 3]

SEAT No. :

PD5180

[Total No. of Pages : 2

[6422]-143

T. Y. B. Pharmacy

BP 503T: PHARMACOLOGY-II

(2019 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagram must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Attempt any five of the following.

[15]

- a) Justify the role of diuretics in the treatment of Congestive Heart failure.
- b) Write mechanism of action of ACTH.
- c) Enlist the hormones secreted by Anterior pituitary with physiological role.
- d) Classify anti-thyroid drugs.
- e) Explain mechanism of action and therapeutic uses of vasopressin.
- f) Classify anti-histaminics with examples.
- g) Classify anticoagulant. Write mechanism of actions of warfarin.

Q2) Attempt any two of the following:

[20]

- a) Classify oral hypoglycaemic agents. Explain Pharmacotherapy of type 2 diabetes.
- b) Classify NSAIDs and write pharmacological details of Aspirin.
- c) Discuss biosynthesis, mechanism of action, pharmacological actions and therapeutic uses of Estrogen.
- d) Write advantage, disadvantage and types of the bioassay. Add a note on bioassay of insulin.

P.T.O.

Q3) Attempt any eight of the following.

[40]

- a) Explain the role of gonadotropins in male.
- b) Write a note on angiotensin receptor blockers.
- c) Define and classify the drug acting on uterus.
- d) Write a note on β -Blocker.
- e) Write a note on corticosteroids.
- f) Justify combination of Statins and Resins to treat hyperlipidemia.
- g) Classify antianginal drugs. Describe the therapeutic utility of vasodilators in angina pectoris.
- h) Discuss pharmacological action of digitalis for the treatment of congestive heart failure.
- i) Explain pharmacology of thiazide diuretics.
- j) Select the drugs used in the treatment of hypertension during pregnancy and justify its use.



Total No. of Questions : 3]

SEAT No. :

[Total No. of Pages : 2

PD5181

[6422]-144

T.Y.B. Pharmacy

BP-504-T : PHARMACOGNOSY & PHYTOCHEMISTRY - II

(2019 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Neat labelled diagrams must be drawn whenever necessary.*

Q1) Objective type questions. (any 5 out of 7) :

[5×3=15]

- a) Utilization of Taxol.
- b) Give botanical source and chemical constituents of Liquorice.
- c) Write principle of electrophoresis.
- d) Draw neat labelled diagram of microscopy of Clove.
- e) Give the chemical test for Senna glycosides.
- f) Write note on fractional distillation.
- g) Write isolation and identification of Quinine.

Q2) Answer the following (Any 2 out of 4) :

[2×10=20]

- a) Explain the principle, instrumentation and applications of Supercritical fluid extraction.
- b) Discuss the role of amino acid pathway in the biogenesis of secondary metabolites.
- c) Explain utilization of radioisotopes in biogenetic studies.
- d) Describe industrial production, estimation and utilization of Vinca alkaloids.

P.T.O.

Q3) Answer the following (any 8 out of 10) :

[8×5=40]

- a) Write isolation and identification of Reserpine.
- b) Explain sublimation and chemical derivatization with its application.
- c) Give biological source, chemical constituents and uses of Tea and Ruta drugs.
- d) Explain features with a neat labelled microscopic diagram of Coriendar fruit.
- e) Explain isolation, identification and analytical profile of Atropine.
- f) Write comprehensive note on Carotenoids with examples.
- g) Discuss the principle, process and applications of Column chromatography.
- h) Write note on industrial production and estimation of Digoxin.
- i) Write principle and instrumentation of Ultrasound assisted extraction of crude drugs.
- j) Explain morphology and microscopic feature of Ginger rhizome.



Total No. of Questions : 3]

SEAT No. :

PD-5182

[Total No. of Pages : 2

[6422]-145

Third Year B. Pharmacy

BP 505T : PHARMACEUTICAL JURISPRUDENCE

(2019 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidate:

- 1) All questions are compulsory.
- 2) Black figures to the right indicate full marks.

Q1) Answer all the questions (Objectives) (Answer 5 out of 7) : [5 × 3 = 15]

- a) What are spurious drugs and adulterated drugs?
- b) What is copyright?
- c) What are schedule J and Y?
- d) What are the functions of Pharmacy Council of India (PCI).
- e) Write the composition of committee constituted by central Government to control and supervise the experiments performed on animals;
- f) Explain the formula to calculate the retail price of formulation as per DPCO.
- g) According to Medical Termination of pregnancy Act. 1971 which places are approved for termination of pregnancy and process for approval of such places.

P.T.O.

Q2) Long Answers (Any 2 out of 4) :

[2 × 10 = 20]

- a) Define “Illicit traffic”. Discuss in detail the powers of Central Government to prohibit, control and regulate certain operations under Narcotic Drugs and psychotropic substances Act, 1985.
- b) Give the constitution and functions of Drugs Technical Advisory Board (DTAB) and Drug Consultative Committee (DCC) as per Drugs & Cosmetics Act & Rules.
- c) Discuss in detail the objectives and salient features of Drugs and Magic Remedies Act and Rules 1976.
- d) Write in detail procedure of inspections of drugs and formulations and qualification and responsibilities of drug inspector as per pharmacy Act.

Q3) Short Answers (Any 8 out of 10) :

[8 × 5 = 40]

- a) Schedule M
- b) Write classes of prohibited advertisement.
- c) Code of Pharmaceutical ethics in relation to medical profession and pharmacy profession.
- d) What is Patent infringement? Explain its significance
- e) Explain Bonded Manufactory
- f) Write requirements of drug store as per D & C Act 1940.
- g) Conditions for license for manufacture of drugs other than schedule X.
- h) Pharmaceutical code of ethics in relation to Job and Trade.
- i) Criteria for patentable inventions
- j) Drug Enquiry Committee.



Total No. of Questions : 3]

SEAT No. :

PD5183

[Total No. of Pages : 2

[6422]-146

T.Y.B. Pharmacy

BP601T : MEDICINAL CHEMISTRY - III

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory. Internal Choices are Given.
- 2) Figures to the right indicate full marks.
- 3) Draw neat diagrams and structures wherever necessary.

Q1) Objective Type Questions. (Answer 5 out of 7)

[5×3=15]

- a) Define antimalarial agents and classify them with examples.
- b) Why sulphonamide class of drugs may cause crystalluria.
- c) Define anti-tubercular agents and what are causative organisms for TB.
- d) Define and classify sulphonamides with suitable examples.
- e) Enlist polypeptide antibiotics with their therapeutic uses.
- f) What is lead molecule? How are they useful in drug discovery?
- g) What are antiprotozoal agents? Give the structure and uses of Iodoquinol.

Q2) Long Answer (Answer 2 out of 4)

[2×10=20]

- a) Discuss chemistry, SAR and MOA of quinolines antimalarials.
- b) Discuss Hansch QSAR analysis with all physicochemical parameters in detail.
- c) Describe the chemistry and MOA of alkylating agents and antimetabolites used as anti-neoplastic agents.
- d) Classify antifungal agents with suitable examples and describe the SAR and MOA of antifungal azoles.

P.T.O.

Q3) Short Answer (Answer 8 out of 10)

[8×5=40]

- a) Write the SAR of tetracyclines.
- b) Write a note on beta lactamase inhibitors.
- c) Describe the chemistry of sulphonamides and explain the synergistic action of sulphamethoxazole and Trimethoprim.
- d) Describe the chemistry and MOA of DNA virus inhibitor.
- e) Describe chemistry and MOA of aminoglycoside antibiotics.
- f) Write a note on quinolones anti-infective agents.
- g) Write a note on Ferguson principle.
- h) Write a note on anthelmintics agents.
- i) Draw the scheme of synthesis for Isoniazid.
- j) Draw the scheme of synthesis for chloroquine.

* * *

Total No. of Questions : 3]

SEAT No. :

PD5184

[Total No. of Pages : 2

[6422]-147

Third Year B. Pharmacy

BP 602 T : PHARMACOLOGY - III (Theory)

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following (Any 5 out of 7) :

[5×3=15]

- a) What are appetizers? Give example.
- b) Classify Antiemetics with MOA of ondansetron,
- c) Define leprosy. Classify antileprotic drugs.
- d) Write clinical symptoms and management of barbiturate poisoning.
- e) Elaborate the term chemotherapy and antibiotics with examples.
- f) Define Laxative. Classify drugs used for constipation.
- g) Define COPD. Enlist drug used in treatment of COPD.

Q2) Answer the following (Any 2 out of 4) :

[2×10=20]

- a) What are macrolides? Give examples. Discuss their antimicrobial spectrum, MOA, and therapeutic uses.
- b) Define Peptic ulcer, classify anti-ulcer drugs & give MOA, Pharmacological action, Adverse effect & therapeutic uses of omeprazole.
- c) Write a note on general principles of treatment of poisoning.
- d) Define tuberculosis, Classify Antitubercular drugs and give MOA, Pharmacological action, Adverse effect & therapeutic uses of isoniazid in details.

P.T.O.

Q3) Answer the following (Any 8 out of 10) :

[8×5=40]

- a) Explain the acute, subacute and chronic toxicity studies along with their purpose.
- b) Write a note on Expectorants.
- c) Write the note on OECD 420 Oral acute toxicity studies in rodent.
- d) Give Rational use of antibiotics.
- e) Classify anti-asthmatic drugs. Explain pharmacology of bronchodilator drugs.
- f) Write a short note on pharmacotherapy of diarrhoea.
- g) Classify antiviral agents with example. Write the adverse effects and uses of acyclovir.
- h) Classify antifungal drugs and give Adverse effect & therapeutic uses of Amphotericin B.
- i) Give detail account on cancer chemotherapy.
- j) Explain in detail Genotoxicity



Total No. of Questions : 3]

SEAT No. :

PD5185

[Total No. of Pages : 2

[6422]-148

T.Y. B. Pharmacy

BP-603T : HERBAL DRUG TECHNOLOGY

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat labeled diagram must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Objectives type (Any 5 out of 7)

[5×3=15]

- a) Define Asavas and Arishtas. Give two examples each.
- b) Brief about present scope of Herbal drug Industry.
- c) Evaluation parameters for Gutika.
- d) Health benefits of Dietary fibers.
- e) Explain preparation and evaluation of Lehya.
- f) What is role of TRAFFIC in biodiversity conservation.
- g) Explain about the methods for identification and authentication of herbs.

Q2) Long Answers (Any 2 out of 4):

[2×10=20]

- a) Explain components of GMP (Schedule T) and its objectives.
- b) Explain basic principles, diagnosis and treatment involve in Ayurveda and Homeopathy.
- c) Explain in detail principles of integrated pest management. Give a detailed account of Biopesticides.
- d) Explain in detail about IPR. Discuss patenting of Curcuma & Neem as case study of Biopiracy.

P.T.O.

Q3) Short Answers (Any 8 out of 10)

[8×5=40]

- a) Explain the ICH guidelines for stability testing.
- b) Write note on organic farming.
- c) Present an overview of good agricultural practices (GAP).
- d) Explain about the drug interactions of Hypericum and Kava-Kava.
- e) Add a note on constitution of ASU DTAB & ASU DCC relating to ASU system of medicine.
- f) Explain schedule Z of Drug and cosmetic act for ASU drugs.
- g) Add a note on Breeder's right.
- h) Explain preparation and evaluation of bhasmas.
- i) Explain colorants and flavors in herbal preparations.
- j) WHO Guidelines for the Assessment of Herbal Drugs.



Total No. of Questions : 3]

SEAT No. :

PD5186

[Total No. of Pages : 2

[6422]-149

T.Y.B.Pharmacy

**BP-604T: BIOPHARMACEUTICS & PHARMACOKINETICS
(2019 Pattern) (Semester - VI) (Theory)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt any FIVE of the following.

[15]

- a) Define Biopharmaceutics. State its importance in formulation development.
- b) What is BCS?
- c) What are various drug binding sites on human serum albumin?
- d) Define drug distribution. State various factors affecting drug distribution process.
- e) Write about the physiological model of pharmacokinetics
- f) Elaborate on Apparent Volume of Distribution
- g) Add note on Non-Compartmental Analysis.

Q2) Attempt any TWO of the following.

[20]

- a) Describe pH partition hypothesis and explain its limitations.
- b) Explain various bioequivalence study designs.
- c) Explain the estimation of various pharmacokinetic parameters for one compartment open model for IV bolus.
- d) What are pharmacokinetic models? Explain various types with their significance.

P.T.O.

Q3) Attempt any EIGHT of the following.

[40]

- a) Explain active transport.
- b) Explain renal clearance and methods to measure the same.
- c) Write a note on the passive diffusion.
- d) Write a short note on factors affecting drug metabolism process.
- e) Discuss in detail about the concept of organ clearance
- f) Differentiate between linear and Non-linear pharmacokinetics
- g) Describe the advantages of urinary excretion data for the estimation of pharmacokinetics.
- h) Discuss the concept of loading dose and maintenance dose.
- i) Explain the concepts of MRT, AUC, AUMC.
- j) Elaborate on causes of non-linearity.



Total No. of Questions : 3]

SEAT No. :

PD5187

[Total No. of Pages : 2

[6422]-150

Third Year B.Pharmacy

BP-605T: PHARMACEUTICAL BIOTECHNOLOGY

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat labeled diagram must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Objectives type (Any 5 out of 7):

[5×3=15]

- a) What is cellular immunity?
- b) Give principle and application of Southern blotting.
- c) Explain method of the preparation of Antitoxins.
- d) Explain role of Amylase. Catalase enzymes.
- e) Explain types of cloning vectors.
- f) Explain role of peroxidase and lipase enzyme in biotechnological processes.
- g) Give basic principle of genetic engineering.

Q2) Long Answers (Any 2 out of 4):

[2×10=20]

- a) What is hybridoma technology? Explain in detail production, purification and application of Monoclonal antibodies.
- b) What are biosensors? Explain types with pharmaceutical application.
- c) Explain Microbial biotransformation with example.
- d) Explain in detail the method of preparation of Glutamic acid by r-DNA technology.

P.T.O.

Q3) Short Answers (Any 8 out of 10):

[8×5=40]

- a) Describe construction and working of Fermenter.
- b) Explain structure and function of MHC.
- c) Explain different types of Mutations.
- d) Brief on PCR 139.
- e) Give principle and application of ELISA.
- f) Explain structure of immunoglobulins.
- g) Explain storage condition and stability of Vaccines.
- h) Give brief introduction of protein Engineering.
- i) Write in detail different methods of enzyme immobilization.
- j) Explain collection, processing and storage of Blood products.



Total No. of Questions : 3]

SEAT No. :

PD-5188

[Total No. of Pages : 2

[6422]-151
Third Year B. Pharmacy
Pharmaceutical Quality Assurance
(2019 Pattern) (Semester - VI) (BP 606T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidate:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Attempt any five of the following :

[15]

- a) State the purpose and benefits of NABL accreditation.
- b) Differentiate between Calibration and validation.
- c) Give responsibilities of quality control and quality assurance.
- d) State the meaning of ICH QSEM and its applicability.
- e) Justify the importance of training in the Pharmaceutical industry.
- f) Distinguish GLP and GMP.
- g) What is recalling of products?

Q2) Attempt any two of the following :

[20]

- a) Discuss handling of returned goods. Draft procedure for disposal of scrap and waste in the Pharmaceutical Industry.
- b) Provide GMP guidelines for premises in the Pharmaceutical industry.
- c) Explain the major quality control tests For secondary packaging materials.
- d) Explain the types of validation. Narrate the importance and scope of validation.

P.T.O.

Q3) Attempt any eight of the following :

[40]

- a) Differentiate BFR and MFR. Judge the significance of those documents.
- b) Summarize general principles of analytical method validation.
- c) Compose a protocol for ICH stability testing guidelines.
- d) Expose the functions of CDSCO as a regulatory agency in relation to Pharmaceuticals.
- e) Devise the procedure for maintenance of stores for raw materials.
- f) Provide the guideline for hygiene and personal records in the Pharmaceutical industry.
- g) Suggest the role of CPCSEA.
- h) Suggest the criteria for the selection and purchase of Pharmaceutical Equipment.
- i) Write a note on distribution records.
- j) Describe the quality control tests for plastic containers for parenteral preparations.



Total No. of Questions : 3]

SEAT No. :

PD5189

[Total No. of Pages : 2

[6422]-152

Fourth Year B.Pharmacy

BP-701T: INSTRUMENTAL METHODS OF ANALYSIS

(2019 Pattern) (Semester - VII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat labelled diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt any five

[5×3=15]

- a) Differentiate between adsorption chromatography and partition chromatography.
- b) Give Significance of Group Frequency region in IR spectroscopy?
- c) Explain the system suitability parameters of a chromatographic system.
- d) What is Jaquinot and Fellget Advantage?
- e) Explain the principle of ion exchange chromatography.
- f) Differentiate the phenomenon of fluorescence and phosphorescence
- g) Explain the applications of IR Spectroscopy.

Q2) Attempt any two

[2×10=20]

- a) Discuss the Rate Theory and Plate Theory
- b) Derive laws of photometry. Discuss deviations of Beers Law
- c) Describe the working of an HPLC system, including its components their functions and applications in Pharmaceutical Analysis
- d) Explain principle, instrumentation and applications of Atomic Absorption Spectroscopy.

P.T.O.

Q3) Attempt any eight

[8×5=40]

- a) Discuss the various factors affecting fluorescence.
- b) Differentiate between normal-phase and reversed-phase TLC. What are the methods used to visualize TLC spots?
- c) How will you differentiate between following pair of compounds by IR Spectra?
 - i) Propanol and Propionaldehyde
 - ii) Aniline and Diethyl amine
- d) Discuss the steps and various detection techniques used in HPTLC.
- e) Explain the principle of Gel chromatography with a note on types of gel and applications of the technique.
- f) Discuss Molecular Vibrations and formulas to calculate fundamental modes of vibration.
- g) Explain construction, working and applications of FID and TCD.
- h) Note on Electronic Transitions in UV-Vis absorption spectroscopy.
- i) Write a note on Pumps of HPLC.
- j) Write a Note on Simultaneous Equation Method for analysis of two component mixture.



Total No. of Questions : 3]

SEAT No. :

[Total No. of Pages : 2

PD5190

[6422]-153

Fourth Year B. Pharmacy

BP 702 T : INDUSTRIAL PHARMACY-II

(2019 Pattern) (Semester-VII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labeled diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following: (Any 5)

[15]

- a) Explain about space requirements for pilot plant as per GMP.
- b) Write a brief note on quality risk management.
- c) Briefly explain SIDBI.
- d) Explain importance of ISO 14000 for pharma industries.
- e) Explain about personnel requirements in pilot plant scale up.
- f) What is vertical technology transfer?
- g) Describe in brief about state licensing authority.

Q2) Answer the following: (Any 2)

[20]

- a) Explain in detail scale up considerations in tablet granulation.
- b) What are the WHO guidelines for Technology Transfer?
- c) Explain regulatory approval process in New Drug Application.
- d) Explain various stages in development of new drug.

P.T.O.

Q3) Answer the following: (Any 8)

[40]

- a) What is platform technology?
- b) Explain concept of six sigma in Quality Improvement.
- c) Give detailed account of documentation, premises and equipments in technology transfer.
- d) Explain process validation.
- e) What are various phases of clinical trials?
- f) Explain scale up considerations in drying of granules.
- g) Explain QTPP and CPP with examples.
- h) Explain scale up considerations in semi solids.
- i) What is GLP and discuss the same.
- j) What are the responsibilities of regulatory affairs professionals?



Total No. of Questions : 3]

SEAT No. :

PD5191

[Total No. of Pages : 2

[6422]-154

Final Year B. Pharmacy

BP 703T : PHARMACY PRACTICE

(2019 Pattern) (Semester-VII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagram must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Attempt any five out of seven.

[15]

- a) Explain the roles and responsibility of hospital pharmacist.
- b) Classify clinical and non clinical hospitals and describe in short.
- c) Define beneficial type of drug interaction.
- d) Add the note on implementation of budget preparation.
- e) What are the benefits of Patient counseling?
- f) Explain the significance of OTC drugs.
- g) Mention the role of hospital pharmacist in the investigational use of drugs.

Q2) Solve any Two out of four.

[20]

- a) Define Therapeutic Drug Monitoring (TDM). Mention its objectives and explain the process involved in TDM.
- b) What is meant by clinical pharmacy? Explain functions and responsibility of clinical pharmacy.
- c) Explain in detail the staff and Infrastructure Requirement for Community Pharmacy.
- d) Enlist the various counselling points to be provided for a Diabetes and Hypertension patient.

P.T.O.

Q3) Solve Any Eight out of Ten.

[40]

- a) Provide the detailed role of pharmacist in medication adherence.
- b) Explain the steps involved in the preparation of hospital formulary.
- c) Give a comprehensive note on factors affecting Therapeutic Drug Monitoring.
- d) What are the advantages and disadvantages of Individual prescription order system?
- e) What are the Benefits and Risks associated with OTC drug use?
- f) Mention the various laboratory blood tests. Explain their significance.
- g) Illustrate the criteria for addition or deletion of drugs from hospital formulary.
- h) Define Inventory Control. Specify the methods involved in Inventory Control.
- i) Indicate the advantages and disadvantages of Unit Dose Distribution System.
- j) Explain in detail about the role of pharmacist in medication adherence.



Total No. of Questions : 3]

SEAT No. :

PD5192

[Total No. of Pages : 2

[6422]-155

Fourth Year B. Pharmacy

BP 704 T : NOVEL DRUG DELIVERY SYSTEM

(2019 Pattern) (Semster - VII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to right indicate full marks.*
- 3) *Draw a neat diagram wherever necessary.*

Q1) Answer the following (Solve 5 out of 7) :

[5×3=15]

- a) What is Microencapsulation. Classify Microencapsulation techniques.
- b) What are gastroretentative drug delivery systems, what is the need to develop GRDDS.
- c) What are Polymers. Classify with examples based on structure and source.
- d) What are Mucoadhesive drug delivery systems Explain steps of mucoadhesion.
- e) Explain niosomes as a targeted drug delivery systems with diagram and examples.
- f) Give MOA of Intrauterine devices.
- g) Write short note on non-erodible ocuserts.

Q2) Answer in detail (Answer 2 out of 4) :

[2×10=20]

- a) Elaborate Coacervation phase separation by -Temperature change method.
- b) Explain pharmaceutical Approaches to design-controlled release formulation based on dissolution controlled matrix and encapsulated type.
- c) Give formulation of mucoadhesive drug delivery systems and elaborate on polymers.
- d) Elaborate on Adhesive-dispersion type and Matrix diffusion type approaches in development of transdermal patches.

P.T.O.

Q3) Answer the following in brief (Answer 8 out of 10) :

[8×5=40]

- a) Write a note on Air suspension technique of microencapsulation.
- b) Write a Note on Glass transition temperature of Polymers.
- c) Write a Note on Osmotically Controlled drug delivery Systems.
- d) Elaborate on Evaluation of GRDDS.
- e) Explain in detail Vapor Pressure Activated Drug Delivery implants.
- f) Write about the intraocular barriers to ophthalmic drug delivery systems.
- g) What are different nasopulmonary drug delivery systems. Elaborate on formulation of metered dose inhalers.
- h) Explain Ionotropic gelation method.
- i) Explain Non-effervescent systems Colloidal gel barrier systems and Swellable systems for GRDDS.
- j) How to determine Tack properties of adhesive used in transdermal patches.



Total No. of Questions : 3]

SEAT No. :

PD5193

[Total No. of Pages : 2

[6422]-156

Fourth Year B. Pharmacy

**BP 801 T : BIOSTATISTICS AND RESEARCH METHODOLOGY
(2019 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat labeled diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Answer the following (Any Five)

[15]

- a) Suggest steps for building a histogram.
- b) What is meant by “Blocking and confounding”?
- c) Why should “Power of a study” be determined?
- d) Explain the types of variables of a study.
- e) Discuss in brief about Mean as a measure of central tendency.
- f) Explain different types of errors in hypothesis testing.
- g) A box contains 5 red, 3 blue and 6 green balls; if one ball is drawn at random from the box what is the probability that the ball is: I Red and II. Green.

Q2) Answer the following (Any Two)

[20]

- a) What are clinical trials? Elaborate the phases of clinical trials.
- b) Explain in detail a Factorial Design.
- c) Which are the different methods for presentation of data? Describe in detail about graphical presentation of data.
- d) An injection has been formulated containing sulfamethaxazole and trimethoprim. It is known that the probability of precipitation in the formulation is 1%. Calculate the chance of observing 2, or fewer than 2 vials containing precipitate in a sample of 100 vials.

P.T.O.

Q3) Answer the following (Any Eight)

[40]

- a) What do you understand by research? What is the importance of research?
- b) Explain multiple regression models.
- c) Write note on MINITAB.
- d) Write short note on Central Composite Design.
- e) Elaborate sample size determination.
- f) Explain in brief about ANOVA.
- g) What is statistical data? Explain in brief about types of data.
- h) Write a note on Wilcoxon Rank Sum Test.
- i) The class marks and their corresponding frequencies are given below:

Class mark	:	22	24	32	36	42	45	51	56
------------	---	----	----	----	----	----	----	----	----

Frequency	:	2	3	4	6	12	8	4	3
-----------	---	---	---	---	---	----	---	---	---

form a cumulative frequency table from the above data.

- j) Given the two lines of regression as, $8X - 10Y + 66 = 0$ and $40X - 18Y - 214 = 0$. Find average of X & Y and correlation coefficient between X and Y.

* * *

Total No. of Questions : 3]

SEAT No. :

PD5194

[Total No. of Pages : 2

[6422]-157

Fourth Year B. Pharmacy

BP 802 T : SOCIAL AND PREVENTIVE PHARMACY

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer any 5 out of 7 :

[15]

- a) Explain socio-culture factor related to health and disease.
- b) Explain the Importance of personal hygiene.
- c) What is cholera? Write measure for prevention of it.
- d) What is hypertension? Write the prevention and control of it.
- e) What are the objectives of national mental health programme?
- f) Describe the toxic effects of tobacco.
- g) Write a note on 'Health promotion in schools'.

Q2) Answer any 2 out of 4 :

[20]

- a) Explain in detail Integrated disease surveillance program (IDSP).
- b) What is Cancer? Write general principles of prevention and control of Cancer.
- c) What are the functions of Primary health centre? Discuss health promotion activities in school.
- d) Elaborate on need of nutrition and balanced diet. Explain the causes, and symptoms of malnutrition and its prevention.

P.T.O.

Q3) Answer any 8 out of 10 :

[40]

- a) Discuss the causative factors, signs, symptoms, prevention and control of influenza.
- b) Write a note on National AIDS control programme.
- c) Discuss avoidable habits with reference to personal hygiene.
- d) Elaborate on National Malaria Prevention Program.
- e) Write general principles of prevention and control of Ebola.
- f) Explain the main causes of blindness. Discuss goals and objectives of National Programme for Control of Blindness and Visual Impairment.
- g) Define health. Write a note on evaluation of public health.
- h) Explain in detail about modes of transmission, symptoms, prevention and control of Dengue.
- i) Give short note on drug addiction and drug substance abuse.
- j) Explain in detail about national rural health mission.



Total No. of Questions : 3]

SEAT No. :

PD5195

[Total No. of Pages : 2

[6422]-158

Fourth Year B.Pharmacy

BP 803ET : PHARMA MARKETING MANAGEMENT

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat labeled diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Answer the questions (Objectives). (Any 5 out of 7) [5×3=15]

- a) Write about designing pharmaceutical marketing channels.
- b) Demonstrate product life cycle.
- c) Enumerate the factors to be considered for new product decisions.
- d) What are the role & responsibilities of Professional sales representative?
- e) Describe various ways of marketing a product.
- f) Correlate the factors affecting product pricing strategy.
- g) Discuss the consumer buying behavior in marketing.

Q2) Long Answers (Any 2 out of 4) [2×10=20]

- a) Describe the ways and means of marketing segmentation & targeting.
- b) Explain with examples launching of new product.
- c) Discuss in detail primary and secondary research state their importance.
- d) What are different methods and determinants of promotional mix.

P.T.O.

Q3) Short Answers (Any 8 out of 10)

[8×5=40]

- a) Discuss about factors regulating patient choice of physician.
- b) Write about the role of market research.
- c) Write a note methods of determining budget for promotional expenditure.
- d) Discuss on OTC marketing strategies.
- e) Write in detail about conflicts in channels.
- f) Explain the objectives and importance of pricing.
- g) Address the issues in price management in pharmaceutical industry.
- h) Elaborate on importance of rural marketing.
- i) Explain the need & importance of e-detailing.
- j) Describe the role of DPCO.



Total No. of Questions : 3]

SEAT No. :

PD5196

[Total No. of Pages : 2

[6422]-159

Fourth Year B.Pharmacy

**BP-804ET: PHARMACEUTICAL REGULATORY SCIENCE
(2019 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labeled diagram wherever necessary.*

Q1) Answer the following. (Any 5 out of 7)

[15]

- a) Discuss structure and function of ethics committee.
- b) Explain federal register.
- c) Discuss Common Technical Document (CTD).
- d) Write about Organogram of CDSCO.
- e) Write a note on Drug Master Files (DMF).
- f) Give the stages of drug discovery.
- g) Write a note on Purple book.

Q2) Answer the following. (Any 2 out of 4)

[20]

- a) Explain the organization and functions of regulatory bodies of EU and Japan.
- b) Explain Procedure for export of pharmaceutical products.
- c) Explain the regulatory approval process for New Drug Application.
- d) Explain stage in development of generic formulations.

P.T.O.

Q3) Answer the following. (Any 8 out of 10)

[40]

- a) Summarize ASEAN Common Technical Document (ACTD) research.
- b) Explain organization structure and functions of USFDA.
- c) Explain the concept of generics and Generic drug product development.
- d) Define law and act. Explain orange book.
- e) Write a note on biopharmaceutical classification system.
- f) Explain the roles and responsibilities of the regulatory authority.
- g) Write a note on GCP obligations of Investigators, sponsors & Monitors.
- h) Write a note on Pharmacovigilance -safety Monitoring in clinical trials.
- i) Explain the approval process for implementing the changes to an approved ANDA.
- j) Give brief account on electronic Common Technical Document (eCTD).



Total No. of Questions : 3]

SEAT No. :

PD5197

[Total No. of Pages : 2

[6422]-160

**Fourth Year B.Pharmacy
BP-805-ET: PHARMACOVIGILANCE
(2019 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Solve any FIVE

[5×3=15]

- a) What is PSUR AND DSUR.
- b) Define
 - i) side effect
 - ii) Pharmacovigilance
- c) Write a note on cohort study in short.
- d) Write the role of CDSCO.
- e) What are different drug information sources available in Pharmacovigilance?
- f) Explain Management of adverse drug reactions.
- g) Explain in short – vaccination failure.

Q2) Solve any TWO

[2×10=20]

- a) Discuss in detail setting of Pharmacovigilance system in hospital.
- b) Define vaccine, Write a detail note on vaccine Pharmacovigilance, and also write reasons for vaccine failure.
- c) Classify ADR. Explain detection and reporting of ADR and management of ADR.
- d) Discuss in detail about Pharmacovigilance program of India (PvPI).

P.T.O.

Q3) Solve any EIGHT

[8×5=40]

- a) Explain in detail Naranjo scale.
- b) Write about good clinical practice in Pharmacovigilance.
- c) Write a short note on WHO causality assessment.
- d) What are different information resources available in Pharmacovigilance?
- e) Enlist various methods used for Pharmacovigilance. Explain any two in detail.
- f) What are the differences in Indian and global Pharmacovigilance.
- g) Discuss the role of effective communication in Pharmacovigilance.
- h) Discuss in detail about ICH guidelines in Pharmacovigilance (objectives and GCP).
- i) Discuss genetics related ADR with examples.
- j) Discuss about adverse events following immunization.



Total No. of Questions : 3]

SEAT No. :

PD-5198

[Total No. of Pages : 2

[6422]-161

Final Year B. Pharmacy

**BP 806 ET : QUALITY CONTROL AND STANDARDIZATIONS
OF HERBALS**

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidate:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Solve the following. (Answer 5 out of 7) :

[5 × 3 = 15]

- a) Note on biological evaluation of crude drugs.
- b) Write types of biological markers two with examples.
- c) Discuss in brief different leaf constants
- d) Write in short 'Record of market complaints' as per schedule T.
- e) Briefly discuss qualitative identification tests for secondary metabolites.
- f) Note on 'Foaming Index' as per WHO for quality control of crude drugs.
- g) Discuss application of TLC in standardization of herbal products.

P.T.O.

Q2) Solve Long Answers (Answer 2 out of 4) :

[2 × 10 = 20]

- a) Explain stability testing of herbal drugs in detail.
- b) Elaborate HPTLC & HPLC application for standardization of herbals with examples.
- c) Discuss in detail list of recommended machinery, equipment and space requirement of premises required for manufacturing of herbal medicines as per schedule T.
- d) Write a note on comparison of various Herbal Pharmacopoeias

Q3) Solve Short Answers (Answer 8 out of 10) :

[8 × 5 = 40]

- a) Write a note on post-harvest processing as per GACP.
- b) Elaborate ICH guidelines for quality control of herbal drugs.
- c) Discuss cultivation parameter as per GAP for medicinal plants.
- d) Explain in brief safety in laboratories as per GLP
- e) Write in detail 'Tannin Estimation' as per WHO guideline for quality control of herbal drugs.
- f) Note on procedure for export registration of herbals.
- g) Discuss microscopical evaluation of crude drugs.
- h) Write a note on determination of pesticide residues as per WHO guidelines.
- i) Explain WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems.
- j) Write in brief 'Reference substances' as per GLP.



Total No. of Questions : 3]

SEAT No. :

PD5199

[Total No. of Pages : 2

[6422]-162

Fourth Year B. Pharmacy

BP807ET : COMPUTER-AIDED DRUG DESIGN

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw neat diagrams and sketches wherever necessary.*

Q1) Objective type questions (Answer 5 out of 7)

[5×3=15]

- a) Write a note on Lipinski Rule for drug likeness screening.
- b) Write a note on Taft steric constant.
- c) Explain various applications of QSAR.
- d) Discuss the role of molecular and quantum mechanics in drug discovery.
- e) Write a note on chemoinformatics in the drug discovery process.
- f) Define Bioinformatics. Mention applications of bioinformatics.
- g) Compare SAR and QSAR.

Q2) Long Answers (2 out of 4)

[2×10=20]

- a) Explain the Hansch analysis approach used for drug design. Comment on its advantages and disadvantages. Explain critical attributes for successful development of model in it.
- b) Explain concept drug discovery, drug design and drug development? Explain various steps and approaches to lead discovery.
- c) What is QSAR? Explain in detail the history and development of QSAR. Comment on physicochemical parameters involved in QSAR. Explain free Wilson analysis approach.
- d) What is Molecular docking? Enlist various types of Molecular docking and explain any one of them. Enlist names of softwares available for docking.

P.T.O.

Q3) Short Answers (8 out of 10)

[8×5=40]

- a) Comment on different databases used in drug design and discovery.
- b) Write elaborative note on two dimensional QSAR.
- c) Write a note docking-based virtual screening.
- d) Explain different methods for the energy minimization.
- e) Write a note on molecular mechanics.
- f) Classify the bio-isosterism approach with examples. Discuss of bioisosteric replacement strategy with one case study.
- g) Explain in detail Quantum mechanics.
- h) Write note on Hammett's substitution constant.
- i) Discuss COMFA and COMSIA.
- j) Define the term pharmacophore. Explain about the pharmacophore mapping suitable example.



Total No. of Questions : 3]

SEAT No. :

PD-5200

[Total No. of Pages : 2

[6422]-163

F.Y.B.Pharmacy

BP808ET - CELL AND MOLECULAR BIOLOGY

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right indicate full marks.*
- 3) Draw well labeled diagrams wherever necessary.*

Q1) Attempt any FIVE:

[5 × 3 = 15]

- a) Define mitosis
- b) Define cell adaptation
- c) Define mutation
- d) Define catabolism
- e) Assemble the structural organization of human body
- f) Give different types of RNA
- g) Importance of cell membrane

Q2) Attempt any TWO:

[2 × 10 = 20]

- a) Explain misregulation of signaling pathway and its role in disease.
- b) Write a note on the applications of Genomics.
- c) Describe gene mapping and gene sequencing in detail.
- d) Explain role of amino acids in protein synthesis.

P.T.O.

Q3) Attempt any EIGHT:

[8 × 5 = 40]

- a) Describe various signaling pathway
- b) Explain the stages in cell cycle
- c) Explain the transducer mechanism of GPCR
- d) Describe different steps involved in transcription process
- e) Draw well labeled structure of cell. Enlist functions of cell and its organelles
- f) Examine the process of DNA replication process.
- g) Describe primary, secondary, tertiary structure of proteins
- h) Describe in detail about MAPK, SiRNA, MicroRNA
- i) Interpret the process of mitosis
- j) Explain the mechanism gene expression



Total No. of Questions : 3]

SEAT No. :

PD5201

[6422]-164

[Total No. of Pages : 2

Fourth Year B. Pharmacy
BP 809ET : COSMETIC SCIENCE
(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat, labeled diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt any five of the following (Any 5)

[5×3=15]

- a) What do you understand from the term comedogenic? Explain.
- b) Brief out the principle, of hair tensile strength test.
- c) Define Cosmetics write down its classification.
- d) Write down difference between cosmeceuticals and cosmetics.
- e) Enumerate the role of surfactants as excipients in various cosmetics.
- f) Write down the principle and formulation of antidandruff shampoo.
- g) What is hair dye? Give detailed classification.

Q2) Attempt any Two of the following (Any 2)

[2×10=20]

- a) Discuss in detail various cosmetic problems associated with skin. How these are addressed?
- b) Discuss the formulation considerations and principle in the formulation of cold cream.
- c) Discuss the formulation and evaluation tests of sunscreen lotion.
- d) Discuss in detail formulation aspects of antidandruff shampoo. Add a note on its evaluation tests.

P.T.O.

Q3) Attempt any Eight of the following (Any 8)

[8×5=40]

- a) What do you mean by a deodorant? Discuss its mechanism of action.
- b) Define TEWL? How will you measure it?
- c) Explain the causes of dandruff? How it is treated?
- d) Write in detail the formulation and evaluation of Mouthwash.
- e) Explain various evaluation test for tooth paste.
- f) Comment on role of preservatives used in cosmetics.
- g) Discuss the formulation and evaluation test of face wash.
- h) Discuss the evolution of cosmeceuticals from cosmetics.
- i) Write down classification of surfactants explain its importance in cosmetic preparation.
- j) Describe the mechanism of action of antiperspirants.

x x x

Total No. of Questions : 8]

SEAT No. :

PD-5202

[Total No. of Pages : 2

[6422]-165

Final Year B. Pharmacy

**BP 810 ET : Experimental Pharmacology
(2019 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Solve any five out of Seven :

[15]

- 1) Write a note on: Graphical representation.
- 2) Write a note on Lagendorff heart preparation.
- 3) Write a brief note on routes of drug administration.
- 4) Write principle and evaluation parameters for Combined Open field test.
- 5) What is research hypothesis?
- 6) Enlist the example of transgenic and mutant animal.
- 7) Describe one way ANOVA.

Q2) Solve any two out of Four :

[20]

- 1) Discuss in brief in vitro methods for screening of sympathomimetics.
- 2) Discuss the pharmacological evaluation of Neuromuscular blockers.
- 3) Enlist the models used for Antiparkinson activity. Discuss in detail the MPCP model.
- 4) Enlist in-vivo and in-vitro methods for evaluating anti-inflammatory activity. And explain the method in which plethysmometer is used.

P.T.O.

Q3) Solve any eight out of Ten :

[40]

- 1) Write in brief about use of transgenic animals in Preclinical Research.
- 2) What is euthanasia? Discuss CPCSEA approved methods of euthanasia.
- 3) List out the different laboratory animals (indicate species and strains) used for Preclinical experiments. Discuss in brief the applications of Rat.
- 4) Write a note on the student's 't' test.
- 5) Enumerate models used for hypertension. Describe surgically induced hypertension models in brief.
- 6) Write a note on screening methods for anti-pyretic activity.
- 7) Enumerate the models used for inducing dyslipidemia. Discuss in brief Triton induced model.
- 8) Write a note on: CPCSEA guidelines for maintenance, breeding and conduct of experiments on laboratory animals.
- 9) Write briefly in-vivo methods to evaluate anti-asthmatic drugs.
- 10) Enlist the different models for evaluation of Antiulcer activity. Describe any one in detail.



Total No. of Questions : 3]

SEAT No. :

PD5203

[6422]-166

[Total No. of Pages : 2

Fourth Year B. Pharmacy

BP-811-ET : ADVANCED INSTRUMENTATION TECHNIQUES

(2019 Pattern) (Semester-VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right indicate full marks.*
- 3) Draw well labeled diagrams wherever necessary.*
- 4) Do not write anything on question paper except seat number.*

Q1) Answer the following questions (Any Five) :

[15]

- a) Define Coupling Constant. Draw Pascal's triangle with reference to Proton NMR.
- b) Explain principle of mass spectroscopy with suitable example.
- c) What is significance of nitrogen rule with reference to mass spectroscopy.
- d) Define Stray light. How the stray light is checked in UV Spectrophotometer?
- e) Discuss procedure for evaluating precision of Electronic Balance.
- f) How the parameter wavenumber is calibrated for IR Spectrophotometer?
- g) Which internal standard is commonly used for H- NMR spectroscopy? Describe its characteristics.

P.T.O.

Q2) Answer the following questions in detail (Any Two) :

[20]

- a) Elaborate on various parameters for calibration of HPLC System.
- b) Suggest suitable chemical structure for following spectroscopic data:

Molecular Formula C_8H_9NO

IR : 3300 cm^{-1} , 3000 cm^{-1} , 1680 cm^{-1} , 1600 cm^{-1} , 1450 cm^{-1}

Proton NMR : δ 7.2 (m, 5H), 7.79 (s, 1H), 2.18 (s, 3H)

Mass (m/z) : 135, 77

- c) Write in detail about instrumentation for X-Ray Diffraction technique.
- d) Give an exhaustive account of Solid Phase Extraction.

Q3) Write short notes on the following (Any Eight) :

[40]

- a) Paper Electrophoresis
- b) HPTLC-MS
- c) Calibration of Fluorimeter
- d) Applications of DTA
- e) Liquid-Liquid Extraction
- f) Fast Atom Bombardment
- g) Procedure for Radioimmuno assay
- h) Rotating Crystal Technique
- i) Quadrupole Mass Analyzer
- j) GC-MS



Total No. of Questions : 3]

SEAT No. :

PD-5204

[Total No. of Pages : 2

[6422]-167

Final Year B.Pharmacy

**BP812ET : DIETARY SUPPLEMENTS AND
NUTRACEUTICALS (Theory)
(2019 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagram whenever necessary.*

Q1) Solve the following. (Answer 5 out of 7) :

[5 × 3 = 15]

- a) Write about chemical nature of flavonoids.
- b) Write health benefits of Xanthophylls.
- c) What is HACCP? What is the purpose of HACCP certification?
- d) How functional foods are differentiated from nutraceuticals?
- e) Define Phytochemicals. Write different chemical classes of Phytochemicals with examples.
- f) How functional foods helpful for chronic diseases prevention?
- g) What is ROS? Discuss its harmful effects on human body.

Q2) Solve long answers (Answer 2 out of 4) :

[2 × 10 = 20]

- a) Detail out medicinal uses and health benefits of Soyabean, Ginseng and Flaxseeds.
- b) Elaborate Dietary fibres and complex carbohydrates as functional food ingredients.
- c) Describe FSSAI and FDA. Discuss regulatory aspects of food safety.
- d) Discuss in detail about effect of processing, storage and environmental factors on the efficacy of nutraceuticals.

P.T.O.

Q3) Solve Short answers (Answer 8 out of 10) :

[8 × 5 = 40]

- a) Describe Pharmacopoeial specification for dietary supplements and nutraceuticals.
- b) What are probiotics? Discuss lactobacillus and its role for management of diseases.
- c) Explain in detail the significance of Nutraceuticals in prevention & management of inflammatory diseases.
- d) Write a note on BHT and BHA. Elaborate its applications in medicines.
- e) Describe source and chemistry of Sea foods and their applications in management of diseases.
- f) What is aging? Discuss its mechanism and application of antioxidants in aging.
- g) Elaborate role of free radicals in brain metabolism and pathology.
- h) Write occurrence, chemical nature and medicinal benefits for phytoestrogens.
- i) Add a note on Biological Source, chemistry and medicinal applications of Lycopene and Lutein.
- j) Discuss defense mechanisms of endogenous antioxidants with examples.



Total No. of Questions : 3]

SEAT No. :

PD5714

[Total No. of Pages : 2

[6422]-501

First Year B. Pharmacy

HUMAN ANATOMY AND PHYSIOLOGY - I
(Revised 2019 Pattern) (Semester - I) (BP101T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Neat labelled diagram must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following (Any 5)

[5×3=15]

- a) Write a short note on regulation of blood pressure.
- b) Give the types of bones with example.
- c) What are the functions of skeletal system?
- d) Define and explain Mitosis and Meiosis.
- e) Define Homeostasis. Enlist the components of feedback mechanism.
- f) What is spinal reflex arc?
- g) Enlist the organs and functions of lymphatic system.

Q2) Answer the following (Any 2)

[2×10=20]

- a) Define cardiac cycle? Explain in detail the phases of cardiac cycle.
- b) Enlist different clotting factors. Explain the mechanism involved in the process of blood clotting.
- c) What are the components of neuromuscular junction and explain the process of muscle contraction in detail.
- d) Draw neat labelled diagram of cell. Explain in detail structure and functions of plasma membrane and mitochondria.

P.T.O.

Q3) Answer the following (Any 8)

[8×5=40]

- a) Explain the structure and function of following bones with neat labelled diagram.
 - i) Femur
 - ii) Thoracic vertebra
- b) Explain the structure and functions of a cell.
- c) List the differences between sympathetic and parasympathetic nervous system.
- d) Explain in detail the life cycle of RBC cells.
- e) Explain anatomy of eye with a neat labelled diagram.
- f) Describe in detail about epithelial tissue.
- g) Explain about pulmonary circulation of blood.
- h) Describe the structure and functions of thymus gland.
- i) Write a note on Electrocardiogram (ECG).
- j) Describe different types of WBCs.



Total No. of Questions : 3]

SEAT No. :

PD-5715

[Total No. of Pages : 2

[6422]-502

F.Y. B.Pharmacy

BP102T : PHARMACEUTICAL ANALYSIS - I

(Rev. 2019 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Draw a neat, labeled diagram wherever necessary.
- 3) Figures to the right side indicate full marks.

Q1) Objective Type Questions (Answer any 5 out of 7)

[5 × 3 = 15]

- a) Write the difference between accuracy and precision.
- b) Explain criteria for selection of Primary Standards.
- c) Define-Normality, Molarity, Equivalent Weight.
- d) Explain the term Errors and its type.
- e) How to prepare and Standardize Sodium Hydroxide Solution.
- f) Explain Concepts of Oxidation and reduction.
- g) Classify Complexometric titrations with suitable example.

Q2) Long answer (Answer any 2 out of 4)

[2 × 10 = 20]

- a) Discuss in detail Mohrs method and Volhards Modified method.
- b) Explain the methods to determine end point of potentiometric titration and its applications.
- c) Discuss the solvents used in non-aqueous titrations, and explain estimation of sodium benzoate.
- d) How do you prepare and standardize the solution of Potassium Permanganate I.P. Write the applications of Permanganometry.

P.T.O.

Q3) Short answer (Answer any 8 out of 10)

[8 × 5 = 40]

- a) Explain the neutralization curves of Strong Acid with Strong Base.
- b) Explain Steps involved in Gravimetric analysis.
- c) Write a note on Fajans method.
- d) Discuss different types of potentiometric titration.
- e) Explain working of Abbes Refractometer
- f) Explain principle , reaction of calcium gluconate injection.
- g) Give applications of Polarography.
- h) Explain Conductivity Cell. And write application of Conductometry.
- i) Explain theories of acid base indicator.
- j) Explain principle, advantages and disadvantages of ceriometry.



Total No. of Questions : 3]

SEAT No. :

PD-5716

[Total No. of Pages : 2

[6422]-503

F.Y. B.Pharmacy

BP103T : PHARMACEUTICS - I

(Rev. 2019) (Semester - I)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw well, labeled diagram wherever necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Short answer questions (solve 5 out of 7) :

[15]

- a) What do you mean by Cold compression method?
- b) Define posology and write any one formula for dose calculation.
- c) Differentiate between Lotions and Liniments.
- d) Enlist the steps in prescription handling.
- e) Define:
 - i) Lozenges
 - ii) Pills
 - iii) Cachets
- f) Define effervescent powder and enlist their advantages.
- g) List out various roles of pharmacist in health care system.

Q2) Long Answer Questions (Solve 2 out of 4)

[20]

- a) Define Emulsions. Add a note of different types of Emulsions. Explain various Identification tests for an Emulsion.
- b) Discuss different factors affecting the dermal penetration of a drug.
- c) Define semisolids. Discuss different ointment bases with examples.
- d) Write a note on:
 - i) Displacement value
 - ii) Types and Parts of Prescription

P.T.O.

Q3) Short answer questions (solve 5 out of 10)

[40]

- a) Discuss formulation aspects for Elixir and Linetus.
- b) Write a note on Gels.
- c) Describe in detail physical incompatibility.
- d) Write a note on history of pharmacy profession.
- e) Discuss evaluation of semisolid dosage forms.
- f) What is the need for dosage form? Classify dosage forms on the basis of site of administration.
- g) Define Syrup. Write the advantages, disadvantages and methods of preparation.
- h) How many ml of 60% w/v glucose solution and 10% w/v glucose solution are required to prepare 3000 ml of 20% w/v glucose solution?
- i) Write a note on Creams.
- j) Define monophasic liquids. Classify them in detail.



Total No. of Questions : 3]

SEAT No. :

PD5717

[Total No. of Pages : 2

[6422]-504

First Year B. Pharm.

BP- 104 - T : PHARMACEUTICAL INORGANIC CHEMISTRY

(Revised 2019 Pattern) (Semester-I) (Theory)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figure to the right indicate full marks.*
- 3) Draw suitable diagram wherever necessary.*
- 4) Do not write anything on question paper except seat number.*

Q1) Attempt any five out of seven.

[5×3=15]

- a) What are buffers? Give classification with examples of buffers in pharmaceutical systems.
- b) What are Expectorants? Give its classification.
- c) Describe raw material as source of impurity.
- d) Give principle and reaction for Arsenic limit test.
- e) Give preparations and uses of Calcium carbonate.
- f) Define radioactivity and half-life of radionuclide with its formula.
- g) What are antimicrobial agents? Give its characteristics.

Q2) Attempt any two out of four.

[2×10=20]

- a) Define limit test? Explain in detail the limit test for Iron and lead.
- b) Define cathartics. Explain the mechanism of it. Give preparation, properties, assay and uses of magnesium sulphate.
- c) Give in brief buffered isotonic solutions and explain the measurements of tonicity.
- d) What is radioactivity? Explain a method for the measurement of radioactivity. Add a note on pharmaceutical applications of radioactive substances.

P.T.O.

Q3) Attempt any eight out of ten.

[8×5=40]

- a) Write a note of limit test for heavy metals.
- b) Give the preparation, identification tests, assay and medicinal uses of sodium thiosulphate.
- c) Give properties of alpha, beta and gamma radiations. Mention the applications of radioactive substances.
- d) Write a note on Geiger muller and scintillation Counters.
- e) Note on Dental products.
- f) Explain modified limit test for Chloride.
- g) Write a note on physiological acid base balance.
- h) Give importance of antacid combinations. Give the preparation, Identification tests and medicinal uses of Aluminum hydroxide gel.
- i) Define monograph and explain the contents of monograph.
- j) Describe about protective and Adsorbents.

