

Total No. of Questions : 6]

SEAT No. :

PE-4983

[Total No. of Pages : 2

[6571]-96

First Year Pharm. D.

1.1 : HUMAN ANATOMY AND PHYSIOLOGY (Theory)
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Neat, labelled diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any 1 :

[1 × 10 = 10]

- a) Draw a neat, labelled diagram of the Kidney and nephron. Explain the process of urine formation.
- b) Explain the structure of the plasma membrane. Enlist the various modes of transport across the cell membrane and add a note on active transport.

Q2) Attempt any 5 of the following :

[5 × 3 = 15]

- a) Write a note on the functions of white blood cells.
- b) Explain the composition of lymph and the functions of the lymphatic system.
- c) Write a note on blood group typing.
- d) Explain the physiology of muscle contraction.
- e) Describe the structure and function of the vertebral column.
- f) Enumerate the functions of the spleen.
- g) Enlist the types of connective tissue and mention their locations.

P.T.O.

Q3) Attempt any 2 :

[2 × 5 = 10]

- a) Classify different tissues and explain epithelial tissue in detail.
- b) Explain haemostasis.
- c) Draw a neat, labelled diagram of a generalized animal cell and write functions of the organelles.
- d) Describe the classification and structure of joints.

SECTION - II

Q4) Attempt any 1 :

[1 × 10 = 10]

- a) Describe structure and functions of the male reproductive system.
- b) Explain the anatomy of the pituitary gland and add a note on the hormones released by it.

Q5) Attempt any 5 :

[5 × 3 = 15]

- a) Write a short note on the tongue and its taste receptors.
- b) Explain the physiological properties of skeletal muscle.
- c) Write a short note on the hormones secreted by the adrenal glands.
- d) Describe any three hormones secreted by the thyroid and parathyroid glands.
- e) Write a short note on sense organs: ear and nose.
- f) Write a note on role of body fluids and electrolytes during exercise.
- g) Write a short note clearance test.

Q6) Attempt any 2 :

[2 × 5 = 10]

- a) Explain the Renin-Angiotensin system and the role of juxtaglomerular apparatus.
- b) Describe the menstrual cycle and hormonal regulation.
- c) Explain the structure and functions of the skin with a labelled diagram.
- d) Write a note on eye and mechanism of vision.



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SEAT No. :

PE-4984

[Total No. of Pages : 2

[6571]-97
F.Y. Pharm. D
1.2 T : PHARMACEUTICS
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Write of any 01 out of 02

[10]

- a) What is the need and rationale for designing a dosage form? Write a detail note on it.
- b) Define powders. Classify in detail powders with their advantages and disadvantages.

Q2) Attempt any 05 out of 07

[15]

- a) Define posology and enlist the factors affecting dose selection.
- b) Define and write its advantages and disadvantages.
- c) In what proportion should 10% W/W Povidone Iodine ointment be mixed with white petroleum jelly to produce 30g of 8% Povidone Iodine ointment?
- d) Calculate percentage of strength of 40°o/p and 20° u/p.
- e) If the adult dose of paracetamol is 500mg, what will be the dose for a child of 3 years?
- f) Differentiate between liniments and lotion.
- g) The adult dose of Nimesulide is 150mg b.i.d. What should be the dose for a child of 35 kg?

P.T.O.

Q3) Write any 02 out of 04

[10]

- a) Explain IP in detail.
- b) What is prescription list the parts of prescription and explain in detail.
- c) What is the specific gravity of a 2:5 mixture of clove oil and mentha oil, and what will be the specific gravity of elixir if 10 ml of this mixture is mixed with 100 ml of an elixir whose specific gravity is 0.964. The specific gravity of clove oil, IP is 1.038 and mentha oil is 0.893.
- d) Write a note on monophasic Dosage forms.

SECTION - II

Q4) Write of any 01 out of 02

[10]

- a) Write a detail note on suppositories explaining definition, advantages, disadvantages, classification, types of bases and evaluation parameters.
- b) Add a detail note on incompatibility explaining physical, chemical and therapeutic incompatibilities.

Q5) Attempt any 05 out of 07

[15]

- a) Discuss advantages and disadvantages of suspension.
- b) Differentiate between decoction and maceration.
- c) Define throat paints, liniments and collodions with examples.
- d) Differentiate between flocculated and deflocculated suspension.
- e) What are the ideal properties of surgical dressings. Give its classification.
- f) Differentiate between suspension and emulsion.
- g) Explain the method for identification of the type of emulsion.

Q6) Write any 02 out of 04

[10]

- a) Write a detailed note on the process of percolation.
- b) Write a note on stability of suspensions
- c) Explain oral emulsion with an example.
- d) Give a note on therapeutic incompatibility.



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SEAT No. :

PE-4985

[Total No. of Pages : 2

[6571]-98

F.Y. Pharm. D

1.3-T : MEDICINAL BIOCHEMISTRY

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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, cycles and structures wherever necessary.

SECTION - I

Q1) Answer any 01 out of 02

[1 × 10 = 10]

- a) Discuss Electron transport chain and its mechanism in energy capture and its regulation
- b) What is lipid metabolism and discuss β -oxidation in detail with net energy calculation

Q2) Answer any 05 out of 07

[5 × 3 = 15]

- a) Define and classify enzymes with suitable examples.
- b) Discuss various factors affecting enzyme activity.
- c) Explains galactose tolerance test and their significance.
- d) What are bile acids and discuss their importance.
- e) Elaborate glycogen storage diseases.
- f) What is fatty liver? Name the two causes responsible for fatty liver?
- g) What is Line-Weaver Burk plot? Give its significance.

Q3) Answer any 02 out of 04

[2 × 5 = 10]

- a) Discuss glycolysis
- b) Write a note on nitrogen balance in body
- c) Discuss urea cycle in detail
- d) Discuss ETC inhibitors

P.T.O.

SECTION - II

Q4) Answer any 01 out of 02

[1 × 10 = 10]

- a) What are the functions of the Kidney? Explain the different parameters involved in Routine Urine analysis with their significance.
- b) Discuss in brief the physiological role of the liver. Explain various tests for Jaundice.

Q5) Answer any 05 out of 07

[5 × 3 = 15]

- a) Explain the dye test and prothrombin test
- b) Explain the test carried out for HDL and LDL
- c) Explain the Pyrimidine biosynthesis.
- d) Elaborate on transamination reaction with examples.
- e) What are aminoacids? Classify them with examples
- f) What is Point shift mutation? Explain with examples.
- g) Explain in brief protein synthesis.

Q6) Answer any 02 out of 04

[2 × 5 = 10]

- a) Explain the abnormalities related to purine metabolism and its treatment
- b) Write a note on urea clearance test
- c) Discuss DNA replication.
- d) Discuss the gluconeogenesis



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SEAT No. :

PE-4986

[Total No. of Pages : 2

[6571]-99

First Year Pharm D

**1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY
(2019 Pattern)**

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION - I

Q1) Define dehydrohalogenation. Explain reaction mechanism, kinetics with rate equation, of E2 elimination. Elaborate the evidences of mechanism of E1 Elimination. **[10]**

OR

Elaborate the Markovnikov's rule for addition of hydrogen halides to the carbon carbon double bond along with its mechanism and comment on effect of peroxides on the addition.

Q2) Solve any five : **[15]**

- a) Explain Diels Alder reaction. **[3]**
- b) Define : **[3]**
 - i) Isomerism
 - ii) Protic Solvents
 - iii) Nucleophile
- c) Draw structures of : **[3]**
 - i) 2-chloro-3-methyl pentanoic acid
 - ii) 2,4-hexadiene
 - iii) 2,3,3- trimethyl pentane
- d) Compare SN1 VS SN2 **[3]**
- e) Write a detailed note on melting point of Ionic Compounds with example. **[3]**
- f) CH_4 has zero dipole moment where as CH_3Cl has resultant dipole moment. Explain in detail **[3]**
- g) Define Lewis acid and Lewis bases with example. **[3]**

P.T.O.

Q3) Write shorts note on any two : [10]

- a) Write a detailed note on Polarity of Bonds & Molecules. Elaborate on intramolecular forces. [5]
- b) Explain reaction mechanism & Kinetics for Substitution nucleophilic aliphatic Unimolecular Reactions. [5]
- c) Define carbocation. Write a detailed note on Stability of Carbocation. [5]
- d) Discuss any two preparation methods of cycloalkanes. Explain Bayer strain theory of cycloalkanes. [5]

SECTION - II

Q4) Describe in detail electrophilic aromatic substitution with the effect of activating and deactivating substituent groups with examples. [10]

OR

Explain in detail reaction and mechanism of Friedel craft alkylation and Friedel craft acylation reactions with examples.

Q5) Solve any five : [15]

- a) Describe orientation and reactivity of free radical addition to conjugated dienes.
- b) Describe Fries rearrangement reaction with an example.
- c) Describe Kolbe reaction with an example.
- d) Describe oxidation and reduction reactions with examples.
- e) Write the reaction and mechanism for conversion of acid to acid chloride.
- f) Outline the steps of Aldol condensation.
- g) Write the mechanism of Reformatsky reaction with it's application.

Q6) Write shorts note on any two : [10]

- a) Write the preparation, assay principle, and medicinal uses of any two of the following: Aspirin, Vanillin, Glyceryl trinitrate, Saccharin sodium.
- b) Explain the oxidation of primary alcohols and reduction of nitro compounds with suitable reagents.
- c) Explain the mechanism of the Wittig reaction and its importance with example.
- d) Explain the Hoffmann rearrangement reaction and its mechanism with example.



Total No. of Questions : 6]

SEAT No. :

PE-4987

[Total No. of Pages : 2

[6571]-100

First Year D. Pharm

1.5 : PHARMACEUTICAL INORGANIC CHEMISTRY

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.

SECTION - I

Q1) Write of any 01 out of 02 :

[10]

- a) Classify different types of volumetric analysis and explain in theory of acid base titration with example.
- b) State the theory of precipitation titration with examples.

Q2) Attempt any 05 out of 07 :

[15]

- a) Write in details about solvents used in non aqueous titration.
- b) Explain different types of error.
- c) Write in details about Primary & secondary standard solution.
- d) What is the redox titration?
- e) What is the levelling effect in non-aqueous titration?
- f) Define the term titrant, titrand, indicator.
- g) How can we determine equivalence point in complexometric titration?

P.T.O.

Q3) Write any 02 out of 04 :

[10]

- a) Summarize the Resonance theory
- b) Explain indicators used in redox titration
- c) What is complexometric titration? explain significance of masking and demasking agent.
- d) Illustrate the methodology involved in gravimetric analysis.

SECTION - II

Q4) Write of any 01 out of 02 :

[10]

- a) What is replacement therapy. Explain sodium and potassium replacement therapy
- b) Discuss mechanism of antacids. Summarize different compound acts as a antacid.

Q5) Attempt any 05 out of 07 :

[15]

- a) What is the limit test? Explain limit test for Arsenic.
- b) Explain Zinc as essential trace element.
- c) Short note on miscellaneous compound.
- d) Differentiate between systemic and non-systemic antacid.
- e) What is cathartics?
- f) What is acidifiers? explain with example.
- g) Discuss dental products.

Q6) Write any 02 out of 04 :

[10]

- a) Discuss medicinal uses of Helium and Oxygen.
- b) Summarize various pharmaceutical compounds which act as antimicrobial agent.
- c) Classify and explain different pharmaceutical aid.
- d) What is radiopharmaceuticals. Explain pharmaceutical application of radioactive substances.



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SEAT No. :

PE-4988

[Total No. of Pages : 2

[6571]-101
S.Y. Pharm. D
2.1-T : PATHOPHYSIOLOGY
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) All the questions are compulsory.*
- 2) Answers to the two separate sections should be written in separate books.*
- 3) Draw a neat labelled diagram whenever necessary.*
- 4) Figures to the right indicates full marks.*

SECTION - I

Q1) Attempt any one of the following (Any 1 out of 2) : **[1 × 10 = 10]**

- a) Describe pathophysiology and etiology of irreversible cell injury.
- b) Explain pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation.

Q2) Attempt any 5 of the following. (Any 5 out of 7) **[5 × 3 = 15]**

- a) What are the risk-factors for AIDS?
- b) What are the factors influencing wound healing?
- c) Explain the terms glycogen infiltration and glycogen storage diseases.
- d) Define the term immunogenic tolerance and state its types.
- e) Define the term metastasis and enlist any 5 types.
- f) Define amyloidosis and enlist the symptoms.
- g) Define transplantation antigens and state its types.

Q3) Attempt any 2 of the following. (Any 2 out of 4) **[2 × 5 = 10]**

- a) Explain etiology and pathogenesis of cancer.
- b) Classify autoimmune diseases. Explain in short mechanism of autoimmunity.
- c) Explain in detail about type-II Hypersensitivity reactions with examples.
- d) Classify the types of tumors. Add a note on spread of malignant tumors.

P.T.O.

SECTION - II

Q4) Attempt any one

[1 × 10 = 10]

- a) With the clinical symptoms, explain the pathogenesis of Parkinsonism.
- b) Define the angina pectoris. Briefly discuss the types and pathogenesis of angina.

Q5) Attempt any five

[5 × 3 = 15]

- a) Explain the etiology, signs, and symptoms of Malaria
- b) Write the mechanism of septic shock
- c) Explain pathogenesis of type 1 Diabetes Mellitus
- d) Define Obesity. Write the Complication of obesity.
- e) Differentiate between Marasmus and Kwashiorkor
- f) Mention the toxic effects of radiation.
- g) Enlist Vitamin-D deficiency disorder

Q6) Attempt any Two

[2 × 5 = 10]

- a) Define TB. Explain in detail about pathophysiology of TB.
- b) Explain the Pathogenesis of peptic ulcer.
- c) Describe the pathophysiology of chronic renal failure.
- d) Write a short note on Asthma



Total No. of Questions :6]

SEAT No. :

PE4989

[Total No. of Pages : 2

[6571]-102

Second Year Pharm.D.

2.2(T) : PHARMACEUTICAL MICROBIOLOGY

(2019 Pattern)

Time :3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Answer to the two sections should be written in separate answer book.
- 3) Neat labelled diagram must be drawn wherever necessary.
- 4) Figures to the right indicate full marks.

SECTION-I

Q1) Attempt any one of the following (Any 1 out of 2) **[1×10=10]**

- a) Give classification of viruses. Describe lytic and lysogenic cycle of bacteriophage along with a neat and labelled diagram.
- b) Define sterilization. Enlist different methods used for sterilization. Explain moist heat sterilization in detail.

Q2) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) What are isolation techniques of bacteria?
- b) Write a note on Gram's staining method.
- c) Differentiate between moulds and yeasts.
- d) What are actinomycetes? Give their significance.
- e) Describe sexual methods of bacterial reproduction.
- f) What is selective and enriched media? Mention suitable examples.
- g) Explain contributions of Robert Koch.

Q3) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Methods used for determination of bacterial growth
- b) Sterility testing of different pharmaceuticals.
- c) "Whittaker's Five Kingdom concept"
- d) Rickettsiae and Spirochetes

P.T.O.

SECTION-II

Q4) Attempt any one of the following (Any 1 out of 2) **[1×10=10]**

- a) Define immunity? Explain in detail about different defence mechanism of host.
- b) Write detail about symptoms and treatment of following diseases:
 - i) Malaria
 - ii) Tuberculosis
 - iii) Cholera
 - iv) Hepatitis

Q5) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) Explain in detail about preparation of vaccine?
- b) Differentiate between endotoxin and exotoxin.
- c) Differentiate between humoral and cell mediated immunity
- d) Write brief note on phagocytosis.
- e) Discuss about Rideal walker coefficient of cresol?
- f) Explain significance of toxoid in active immunity
- g) Write a note on QBC test.

Q6) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Elaborate on different factors affecting on disinfectant action
- b) What are immunoglobulins? Write a note on classes of immunoglobulins.
- c) Enlist the different properties of antigen. Explain the principle of Precipitation reaction
- d) Explain in detail about immunization programme



Total No. of Questions : 6]

SEAT No. :

PE-4990

[Total No. of Pages : 2

[6571]-103
S.Y. Pharm D.
2.3 : PHARMACOGNOSY &
PHYTOPHARMACEUTICALS
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any one out of two : [10]

- a) Write in detail about the cultivation, collection, processing and storage of crude drugs.
- b) Explain the classification of crude drugs based on taxonomy, morphology and therapeutic use.

Q2) Attempt any five out of seven : [15]

- a) Define crude drug with examples
- b) Write uses of citronella oil
- c) What are different traditional systems of India?
- d) Give an example of secondary metabolite and its function
- e) Write steps involved in processing of crude drugs
- f) Give uses of tobacco as a pesticide
- g) Write about any one organized crude drug.

Q3) Attempt any two out of four : [10]

- a) Explain classification of crude drugs based on pharmacology with examples.
- b) Describe processing and storage of herbal drugs
- c) Write short note on unorganized crude drugs with examples
- d) Explain the role of natural pesticides in agriculture

P.T.O.

SECTION - II

Q4) Attempt any one out of two : [10]

- a) Discuss the chemistry, classification and therapeutic applications of glycosides from Digitalis and Senna.
- b) Write in detail about glycosides from Liquorice and Quassia with their therapeutic applications.

Q5) Attempt any five out of seven : [15]

- a) Write chemical tests for starch.
- b) List two commercial applications of isapgol.
- c) Explain pharmacognosy of Datura.
- d) What are the chemical constituents of Liquorice?
- e) What is TLC? Give its procedure.
- f) Give examples of resins and their applications.
- g) Write any three therapeutic uses of vinca alkaloids.

Q6) Attempt any two out of four : [10]

- a) Describe classification and uses of lipids.
- b) Explain chromatographic techniques used in herbal drug analysis.
- c) Write about methods of crude drug adulteration.
- d) Describe chemistry and application of fennel oil.



Total No. of Questions : 6]

SEAT No. :

PE4991

[Total No. of Pages : 2

[6571]-104

Second Year Pharm D.

2.4 T : PHARMACOLOGY - I

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Long Answers (Any 1 out of 2).

[1×10=10]

- a) Discuss the routes of administration of drugs with advantages and disadvantages of each route. Add a note on factors influencing the choice of route of drug administration.
- b) Define and classify antihypertensive drugs with suitable examples. Add a note on the renin - angiotensin - aldosterone system (RAAS) and drugs acting on it.

Q2) Short Answers (Any 5 out of 7).

[5×3=15]

- a) Classify drugs used for hyperlipidemia with examples and the mechanism of action.
- b) Write pharmacology of digitalis.
- c) Define drug absorption, write factors affecting absorption and add a note on bioavailability.
- d) Give a pharmacological account of neuromuscular blockers.
- e) Write a note on enzyme inhibition with a suitable example.
- f) What is drug metabolism? Describe factors affecting metabolism.
- g) Define pharmacology and write a note on the scope of pharmacology.

P.T.O.

Q3) Medium Answers (Any 2 out of 4). [2×5=10]

- a) Define agonists, antagonists, and inverse agonists with suitable examples.
- b) Write a note on cholinesterase inhibitors.
- c) Classify antiadrenergic drugs with suitable examples and write their clinical uses.
- d) Write a note on factors affecting drug effects.

SECTION - II

Q4) Long Answers (Any 1 out of 2). [1×10=10]

- a) Describe biosynthesis, storage release and physiological role of insulin. Add note on insulin preparations.
- b) Define and classify general anesthetics and write a note on stages of anesthesia.

Q5) Short Answers (Any 5 out of 7). [5×3=15]

- a) Write a note on platelet - activating factors.
- b) Classify oral hypoglycemic drugs.
- c) Write short note on the mechanism of action, uses and adverse effects of aspirin.
- d) Write a note on expectorants.
- e) Classify antipsychotic drugs and write adverse effects.
- f) Define and classify sedatives and hypnotics with examples and uses.
- g) Write a note on uterine stimulants.

Q6) Medium Answers (Any 2 out of 4). [2×5=10]

- a) Write biosynthesis and physiological role of Histamine and add a note on Histamine receptors.
- b) Classify 5-Hydroxytryptamine antagonists with suitable examples and clinical uses.
- c) Classify β blockers with suitable examples and clinical uses.
- d) Define and classify NSAIDs. Write MOA, uses and ADR for Paracetamol.



Total No. of Questions : 6]

SEAT No. :

PE-4992

[Total No. of Pages : 2

[6571]-105
S.Y. Pharm. D
2.5-T : COMMUNITY PHARMACY
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Attempt any one of the following (Any 1 out of 2) : [1 × 10 = 10]

- a) Discuss importance of health screening services. Explain about health screening services for cholesterol test.
- b) Define health. Describe the care for geriatric patients by health promotion.

Q2) Attempt any five of the following (Any 5 out of 7) : [5 × 3 = 15]

- a) Outline role of community pharmacist in family planning.
- b) Summarize Lung function tests used for clinical intervention.
- c) How computers and software's are useful in Community pharmacy
- d) Give examples of drug-drug interactions.
- e) Discuss the roles and responsibilities of a community pharmacist.
- f) Discuss scope of Community Pharmacy.
- g) Enlist objectives of patient counseling.

Q3) Attempt any two of the following (Any 2 out of 4) : [2 × 5 = 10]

- a) Discuss significance of different parts of a prescription.
- b) Elaborate different steps involved in the selection of site for community pharmacy.
- c) Illustrate the legal requirements to open a drug store.
- d) Explain the layout of community pharmacy.

P.T.O.

SECTION - II

Q4) Attempt any one of the following (Any 1 out of 2) : [1 × 10 = 10]

- a) Write a note on rational use of drugs.

Elaborate pathophysiology and common drug therapy of following diseases :

- i) Constipation
 - ii) Dyspepsia
- b) Mention the nutritional deficiencies of diet. Explain the role of pharmacist in nutritional counseling.

Q5) Attempt any five of the following (Any 5 out of 7) : [5 × 3 = 15]

- a) Mention any four factors affecting medication adherence.
- b) Define Health screening.
- c) Discuss clinical presentation of AIDS.
- d) Explain the pathophysiology of pain.
- e) Illustrate treatment and measures for prevention of Vitamin A deficiency.
- f) Enlist functions of hormones released from posterior pituitary gland.
- g) Summarize significance of trade of pharmacy.

Q6) Attempt any two of the following (Any 2 out of 4) : [2 × 5 = 10]

- a) Describe the pharmaceutical care for pediatrics.
- b) Define communicable disease. Discuss the role of community pharmacist in preventing communicable diseases.
- c) Define OTC medication. List the categories of OTC medication.
- d) Outline pharmacotherapy of syphilis and leprosy.



Total No. of Questions : 6]

SEAT No. :

PE-4993

[Total No. of Pages : 2

[6571]-106
Second Year Pharm D.
2.6-PHARMACOTHERAPEUTICS - I
(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) All questions are compulsory.*
- 2) Write answers for section I and section II in separate answer sheets.*
- 3) Draw neat, labelled diagram wherever necessary.*
- 4) Figures to the right indicate full marks.*

SECTION - I

Q1) Explain what is decompensated heart failure in detail and elaborate on its complete management. **[10]**

OR

Elaborate on what is Asthma, its etiopathogenesis, clinical presentation and complete management of the same. **[10]**

Q2) Solve any five: **[15]**

- a) Enlist various pulmonary function tests and their clinical significance **[3]**
- b) Differentiate primary hypertension Vs secondary hypertension. **[3]**
- c) Can Diuretics be given as monotherapy. Justify. **[3]**
- d) Which is reversible chronic bronchitis or Asthma. Justify **[3]**
- e) Enlist various drugs causing pulmonary diseases. **[3]**
- f) Give the classification of calcium channel blockers with examples. **[3]**
- g) What is angina pectoris. Give classification. **[3]**

P.T.O.

Q3) Write shorts on any two [10]

- a) Unstable angina and its treatment as per NYHA. [5]
- b) Management of hyperlipidemia. [5]
- c) Drug induced lung diseases. [5]
- d) Treatment of Torsade's de pointes [5]

SECTION - II

Q4) Explain in detail management of T2DM. [10]

OR

Explain in detail management of open angle glaucoma.

Q5) Solve any five: [15]

- a) Give examples of non-hormonal therapies used in menopause. [3]
- b) What are changes that occur in TFT in hypothyroidism? [3]
- c) Give examples of different estrogen-progesterone combinations used in menopause. [3]
- d) What are clinical presentations in hyperthyroidism? [3]
- e) What are factors that are significant for drug selection in lactation? [3]
- f) Give examples of any 3 drugs that are contraindicated in pregnancy. [3]
- g) Define: Z-score, T-score. GDM. [3]

Q6) Write shorts on any two : [10]

- a) Pharmacokinetic changes in geriatrics. [5]
- b) Role of pharmacist in Rational drug use. [5]
- c) Bisphosphonates in osteoporosis. [5]
- d) Oral Contraceptives. [5]



Total No. of Questions : 6]

SEAT No. :

PE4994

[6571]-107

[Total No. of Pages : 2

Third Year Pharm. D.

3.1 - T : PHARMACOLOGY - II

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION-I

Q1) Attempt any one of the following (Any 1 out of 2): **[1×10=10]**

- a) Classify penicillin with examples and add a spectrum of activity. Write the mechanism of action and therapeutic uses of amoxicillin.
- b) Classify diuretics giving suitable examples from each class. Enumerate about Thiazide diuretics and Loop diuretics.

Q2) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) What is DOTS therapy?
- b) What are Low Molecular Weight Heparins? Give two examples.
- c) Enlist the drugs causing ototoxicity and nephrotoxicity.
- d) What is amoebiasis? Name drugs used in the treatment of amoebiasis.
- e) Define Carcinogenicity with its etiology.
- f) What is malaria? Classify anti-malarial agents with example.
- g) List out the adverse effects of Chloramphenicol.

Q3) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) What are macrolide antibiotics? Write the mechanism of action and therapeutic uses of erythromycin.
- b) Explain pharmacology of cyclophosphamide.
- c) Summarize chemotherapy of leprosy.
- d) Discuss pharmacology of lamivudine.

P.T.O.

SECTION-II

Q4) Attempt any one of the following (Any 1 out of 2): **[1×10=10]**

- a) Explain the stages of transcription in eukaryotes. Add a note on factors regulating the transcription.
- b) Elaborate any one method of acute toxicity study as per OECD.

Q5) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) Outline mechanism of action of Cyclosporin.
- b) Mention stages of mitosis and meiosis.
- c) What are oncogenes and tumor suppressor genes?
- d) Mention the cell signal transduction pathways.
- e) List out the immunostimulants.
- f) Discuss qualities of an ideal biosensor.
- g) Give reasons for activation of P53 factor.

Q6) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) What are macromolecules? Give functions of macromolecules.
- b) Explain first generation gene sequencing technique.
- c) Enumerate factors regulating and modifying cell cycle.
- d) Discuss types of gene mutations.



Total No. of Questions : 6]

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PE4995

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Third Year Pharm. D.

3.2 T : PHARMACEUTICAL ANALYSIS

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Write any 1 out of 2 : **[10]**

- a) State the principle and describe the instrumentation of Gas Chromatography.
- b) Discuss total quality management and quality review.

Q2) Attempt any 5 out of 7 : **[15]**

- a) Short note on gel electrophoresis.
- b) Define the principle of High-Performance Thin Layer Chromatography.
- c) Discuss the application of HPTLC.
- d) Short note on affinity chromatography.
- e) Summarize the gel filtration chromatography.
- f) Explain development technique of paper chromatography.
- g) State the principle and application of TLC.

Q3) Write any 2 out of 4 : **[10]**

- a) Discuss the methodology of ion exchange chromatography.
- b) Illustrate the detectors in High Performance Liquid Chromatography.
- c) Explain different types of ion-exchange synthetic resin.
- d) State the principle and discuss the methodology of paper electrophoresis.

P.T.O.

SECTION - II

Q4) Write any 1 out of 2 : **[10]**

- a) What is the principle of conductometric titration? Discuss different types of conductometric titrations.
- b) Explain the principle and instrumentation of IR spectroscopy.

Q5) Attempt any 5 out of 7 : **[15]**

- a) Explain effect of solvent on absorption spectra.
- b) Describe the sources of UV-Visible spectroscopy.
- c) Write down applications of UV-Visible spectroscopy.
- d) Define the principle of flame photometry.
- e) Compare between AES and AAS.
- f) What is optical rotatory dispersion?
- g) Differentiate between NMR and ESR.

Q6) Write any 2 out of 4 : **[10]**

- a) Discuss the factors affecting on fluorescence and explain quenching effect.
- b) Summarize fragmentation pattern and types of ions produced in mass spectroscopy.
- c) Describe the amperometry titration procedure.
- d) Explain the instrumentation of DSC.

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Total No. of Questions :6]

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PE4996

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Third Year Pharm. D.

3.3 T : PHARMACOTHERAPEUTICS-II

(2019 Pattern)

Time :3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *Neat labelled diagram must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION-I

Q1) Attempt any one of the following (Any 1 out of 2): **[1×10=10]**

- a) Explain the general guidelines for the rational use of antibiotics.
- b) Explain the Etiology, Pathophysiology, Diagnosis and Management of Tuberculosis.

Q2) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) Discuss the adverse effects of Anti-tubercular drug.
- b) Write any four criteria for selection of antimicrobials.
- c) Discuss diagnosis of otitis media.
- d) List of DMARDs used in the treatment of rheumatoid arthritis.
- e) What is the role of counselling in gout patient ?
- f) What is the diagnostic approach for SLE?
- g) List out clinical features and diagnostic criteria for meningitis.

Q3) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Write note on septicaemia.
- b) Discuss management of enteric fever.
- c) Write a note on Diuretic resistance.
- d) Classify Respiratory tract infections. Explain the management of any two upper respiratory tract infections.

P.T.O.

SECTION-II

Q4) Attempt any one of the following (Any 1 out of 2) **[1×10=10]**

- a) Describe the pharmacotherapy of chronic renal failure.
- b) Explain in detail Basic principles of Cancer therapy and General introduction to cancer chemotherapeutic agents.

Q5) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) Explain topical therapy for impetigo.
- b) What are treatment options for acute renal failure?
- c) Classify Leukaemia.
- d) Explain the diagnosis and staging of Cancer.
- e) Write importance of radiotherapy in cancer treatment.
- f) Write a note on Acute Tubular Necrosis.
- g) Mention the route of spread of Scabies.

Q6) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Briefly outline the importance of screening in the prevention and early detection of cancer.
- b) Classify the types of psoriasis. Mention the role of phototherapy and retinoids in the management of psoriasis.
- c) Explain management of chemotherapy nausea and emesis.
- d) Write a note on renal dialysis.



Total No. of Questions : 6]

SEAT No. :

PE4997

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Third Year Pharm. D.

3.4 T : PHARMACEUTICAL JURISPRUDENCE

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Attempt any one of the following (Any 1 out of 2): **[1×10=10]**

- a) Discuss Manufacture & Labelling of drug according to D and C act.
- b) Write the objectives of Medical & toilet preparation Act, 1955 and rules under 1976 and explain bounded manufactory.

Q2) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) What is schedule X, schedule F & schedule M?
- b) Enlist the documents required for obtaining import license.
- c) What are the functions of PCI?
- d) What were the recommendations by Drug Enquiry Committee?
- e) Difference between state pharmacy Council & Joint state pharmacy Council.
- f) Discuss the code of ethics to be followed by pharmacist in his own profession.
- g) Write in brief about Mudaliar Committee.

P.T.O.

Q3) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Write a note on pharmaceutical legislation.
- b) Write a note on CDL.
- c) Explain 'Education Regulation' under pharmacy Act, 1948.
- d) Write a note on code of Pharmaceutical Ethics.

SECTION - II

Q4) Attempt any one of the following (Any 1 out of 2): **[1×10=10]**

- a) Discuss in detail the objectives & salient features of Drug & Magic remedies Act & rules 1976.
- b) What are the objectives of NDPS Act? Describe the manufacture, sale and export of opium under NDPS Act.

Q2) Attempt any five of the following (Any 5 out of 7): **[5×3=15]**

- a) What is cannabis, coca derivative & coca leaf?
- b) What are the functions of Narcotic commissioner according to NDPS Act 1985?
- c) What are the objectives of DPCO & explain schedules thereunder?
- d) Explain the general formula for calculation of MRP of a scheduled formulation.
- e) What are Geographical Indications?
- f) What is copyright?
- g) Define cruelty to animals.

Q6) Attempt any two of the following (Any 2 out of 4): **[2×5=10]**

- a) Discuss offences & penalties under Narcotic Drugs & Psychotropic Substances Act & Rules.
- b) Discuss the constitution of Animal Welfare Board of India. Enlist different offences & penalties under prevention of cruelty to animal act 1960.
- c) Write a note on Prescription product.
- d) Write a note on essential commodities act relevant to drug price control order.



Total No. of Questions : 6]

SEAT No. :

PE4998

[Total No. of Pages : 2

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T.Y. Pharm. D

3.5 : MEDICINAL CHEMISTRY

(2019 Pattern)

Time : 3Hours]

[Max. Marks : 70

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.*

SECTION - I

Q1) Write any 01 out of 02 **[10]**

- a) Define antibiotics. Illustrate Classification, MOA, Chemistry, and SAR of Tetracyclines.
- b) Describe the chemistry and MOA of alkylating agents and antimetabolites used as antineoplastic agents.

Q2) Attempt any 05 out of 07 **[15]**

- a) Elaborate Drug design.
- b) Classify local anti-infective agents.
- c) Explain synthesis and medicinal uses of Albendazole.
- d) Describe classification of anti-tubercular agents with suitable examples.
- e) Elaborate Antifungal antibiotics.
- f) Illustrate classification of anti-protozoal agents with suitable examples.
- g) Write chemistry of azoles as antifungal agents.

Q3) Write any 02 out of 04 **[10]**

- a) Illustrate SAR for Penicillins.
- b) Classify anti-malarial agents with examples; explain chemistry of Quinolines in detail.
- c) Comment on Sulphonamides and write synthesis of sulphanilamide.
- d) Classify and illustrate Antiviral agents.

P.T.O.

SECTION - II

Q4) Write any 01 out of 02 **[10]**

- a) Discuss nomenclature of steroids, mechanism of action, chemistry, SAR and medicinal uses of Corticosteroids.
- b) Classify cardiovascular agents. Explain classification, mode of action and chemistry for Anti-hypertensive agents.

Q5) Attempt any 05 out of 07 **[15]**

- a) Classify Antihyperlipidemic agents.
- b) Explain sodium channel blockers as anti-arrhythmic agent.
- c) Explain chemistry of potassium sparing diuretics.
- d) Illustrate anti-thyroid agents
- e) Pharmacological uses of Progestins.
- f) Classify anti-anginal agents.
- g) Enlist various coagulants and anticoagulants.

Q6) Write any 02 out of 04 **[10]**

- a) Illustrate hypoglycaemic agents.
- b) Write a short note on Diagnostic agents.
- c) Classify Diuretics; explain their mode of action and chemistry in detail.
- d) Illustrate SAR for estrogens.



Total No. of Questions : 6]

SEAT No. :

PE4999

[Total No. of Pages : 2

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Third Year Pharm.D.

3.6 (T) : PHARMACEUTICAL FORMULATIONS

(2019 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Answer to the two sections should be written in separate answer book.*
- 3) Neat labelled diagram must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one of the following (Any 1 out of 2). **[1×10=10]**

- a) Define and classify Capsule. Explain the manufacturing and evaluation of soft gelatin capsules.
- b) Define and classify tablet. Explain the quality control parameters for the tablet manufacturing process.

Q2) Attempt any five of the following (Any 5 out of 7). **[5×3=15]**

- a) Differentiate between flocculated and deflocculated suspension.
- b) Define elixirs and linctuses.
- c) How is the leakage test performed for parenterals?
- d) List the lubricants used in tablets.
- e) Name the quality control tests for capsules. Explain any one.
- f) Define bloom strength and write its importance.
- g) What are Emulsifying agents? Give two examples.

P.T.O.

Q3) Attempt any two of the following (Any 2 out of 4). **[2×5=10]**

- a) State the significance of stokes equation in the formulation of suspension.
- b) Describe the wet granulation method along with the equipment used in each step.
- c) What is HLB? Its application in formulation of biphasic liquid orals.
- d) Define emulsion. Discuss the identification tests for emulsion.

SECTION - II

Q4) Attempt any one of the following (Any 1 out of 2). **[1×10=10]**

- a) Define parenterals. Give formulation considerations of SVP and explain official quality control tests of parenterals in detail.
- b) Define prolonged action dosage form. Write their advantages and disadvantages. Explain the formulation and evaluation of Transdermal patches.

Q5) Attempt any five of the following (Any 5 out of 7). **[5×3=15]**

- a) Explain the evaluation of ophthalmic preparations.
- b) Discuss the factors affecting permeation of drug into the skin.
- c) Give types of permeation enhancers.
- d) Describe LAL test used to determine the presence of pyrogens in parenteral products.
- e) Classify and explain gelling agents.
- f) Give significance of isotonicity in ophthalmic.
- g) Discuss various suppository bases.

Q6) Attempt any two of the following (Any 2 out of 4). **[2×5=10]**

- a) Give brief explanation on stability of emulsions.
- b) Explain methods of preparations of ointments.
- c) Discuss about nasal drug delivery system.
- d) Write in detail about steps involved in manufacturing of hard gelatin capsule shell.

