

Roll No.

Total No. of Questions : 18

Total No. of Pages : 02

Pharm.D. (Post Baccalaureate) (Sem.-5)  
**PHARMACOEPIDEMIOLOGY & PHARMACOECONOMICS**

Subject Code : PD502T-19

M.Code : 90290

Date of Examination : 02-06-23

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

Write briefly :

1. Write briefly about need, aim and applications of pharmacoepidemiology.
2. Write briefly about various drug use measures in pharmacoepidemiology.
3. Discuss in detail about cost minimization and cost effectiveness analysis.
4. Write briefly about record linkage system.
5. What is defined daily dose and prescribed daily dose.
6. Define case report and case series.
7. Define randomized controlled trials and case control studies.

**SECTION-B**

8. Discuss about concept of measurement of risk in pharmacoepidemiology.
9. Write a note on spontaneous reporting with the help of a case study.
10. Discuss the advantages and limitations of pharmacoepidemiologic studies.

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11. Write a note on drug induced birth defects.
  12. Define cross sectional study, what are its advantages and disadvantages.
  13. Discuss about requirement for an ideal database in pharmacoepidemiological studies.
  14. Discuss the various types of pharmacoepidemiologic evaluations.
  15. Write a note on definition, history and need for pharmacoepidemiologic evaluations.
- SECTION-C**
16. Discuss about various pharmacoepidemiological methods used to assess drug utilization review.
  17. Define pharmacoepidemiology and explain its outcome measurement related to prevalence, incidence rate and medication adherence management.
  18. Discuss about the role of softwares in pharmacoepidemiologic evaluations. Discuss the various softwares that are available, their advantages and limitations.



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Total No. of Questions : 12

Pharm.D. (Post Baccalaureate) (Sem.-5)

CLINICAL RESEARCH

Subject Code : PD501T-19

M.Code : 90289

Date of Examination : 31-05-2023

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is consisting of SEVEN questions carrying TWO marks each attempt any FIVE.
2. SECTION-B contains EIGHT questions carrying FIVE marks each and students have to attempt any SIX questions.
3. SECTION-C contains THREE questions each question carries FIFTEEN marks students have to attempt any TWO questions.

**SECTION-A**

1. Write on the following:

- a) Describe the significance of phase III clinical trials.
- b) Define Abbreviated New Drug Application.
- c) Define protocol and protocol deviations.
- d) Define Informed consent form.
- e) Define Good Clinical Practice.
- f) Write two major responsibilities of trial sponsor.
- g) Briefly describe the role of chairperson as member of IEC.

**SECTION-B**

2. Briefly describe the various phases of clinical trials.
3. Describe the role and responsibilities of all members of IEC.
4. Briefly describe the various toxicological screening methods.

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5. Briefly describe the significance of ICH GCP guidelines in Clinical research.
6. Describe the components of case report form
7. Describe the responsibilities of trial coordinator as per ICH GCP guidelines.
8. Describe the significance of safety monitoring in clinical trials
9. Briefly describe the challenges involved in implementation of guidelines.

**SECTION-C**

10. Describe the various approaches of drug development process.
11. Write short note on the following:
  - a) Abbreviated New Drug Application
  - b) Data management in clinical trials
12. Describe the major ethical issues involved in conducting interventional clinical trials.



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Total No. of Pages : 02

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Pharm.D. (Post Baccalaureate) (Sem-5)  
**CLINICAL PHARMACOKINETICS & PHARMACOTHERAPEUTIC  
DRUG MONITORING**  
Subject Code : PD503T-19

M.Code : 90291  
Date of Examination : 30-05-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

I. Write on the following :

- a) Define half-life and volume of distribution.
- b) Which nomograms are used for estimation of clearance in adults and children?
- c) Define therapeutic drug monitoring. Give two examples of drugs with narrow therapeutic index.
- d) Define biliary excretion.
- e) Define Pharmacogenetics. Name two drugs that inhibit CYP450 2D6 metabolic enzymes.
- f) Enlist methods for determining hepatic and renal clearance.
- g) Define population pharmacokinetics.

**SECTION-B**

2. Describe various indications for conducting therapeutic drug monitoring.
3. Describe the significance of adjusting dosage regimen in obese patients.
4. Describe the genetic polymorphism in drug target genes.
5. Describe the method of creatinine clearance estimation from human blood and urine samples.
6. Describe the concept of first pass effect and enterohepatic circulation.
7. Describe the factors affecting the size of loading and maintenance dose.
8. Describe the Bayesian adaptive method for dose calculation.
9. Describe drug-drug interactions with suitable examples based on inhibition/induction of metabolic enzymes.

**SECTION-C**

10. Explain the model-I and model-II methods for calculation of dose during extracorporeal removal of drugs.
11. Describe the protocol for therapeutic drug monitoring and also pharmacokinetic considerations for TDM of carbamazepine.
12. Describe in detail with suitable examples the basis of various pharmacokinetic drug-drug interactions.



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6. Discuss the Role of ethical committee in hospital.
  7. Discuss the warehousing of drugs in Hospital Pharmacy.
  8. Professional skills required for hospital pharmacist.
  9. Describe the functions of pharmacist handling radio isotopes.
- SECTION-C**
10. Discuss in detail the formulation requirements and manufacturing process for tablets.
  11. Classify and explain parenteral dosage forms. Write the quality testing methods for parenteral dosage forms.
  12. Define Hospital formulary. Describe the development and management of Hospital formulary.



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4. Explain the tests which differentiate the Bronchial Asthma and Chronic Obstructive Pulmonary disease.

5. Discuss about components of Pharmaceutical care plan.

6. Describe the systemic approach in answering queries received in drug information center.

7. Discuss about verbal and non-verbal communications skills, its applications in patient care services.

8. Discuss about role of pharmacist in management of ADR's.

9. Discuss briefly about preparation of written and verbal reports.

### SECTION-C

10. Define medication errors. Classify its types and discuss about its causes and methods to prevent medication errors.

11. Define drug information centre. Discuss in detail the need, organization and functions of drug information centre.

12. Define and classify various types of adverse drug reactions. Describe about their predictability and preventability assessment.



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Pharm.D. (Post Baccalaureate) (Sem.-04)

CLINICAL PHARMACY

Subject Code : PD403T19

M.Code : 78149

Date of Examination : 07-06-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Mention three objectives of clinical pharmacy.
  - Role of liver enzymes in hepatic diseases?
  - Thyroid Function tests.
  - Define communication skills.
  - Define medication history interview.
  - Tests associated with cardiac disorders.
  - Enlist pulmonary functions tests.
- SECTION-B**
- Write notes on pharmacist intervention in drug therapy monitoring.
  - Write notes on factors contribution to and prevention of medication errors.
  - Explain the methods of detection of medication errors.

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- Discuss protocol for case presentation
- Write a note on clinical importance of blood urea, serum creatinine and plasma sodium levels.
- Elaborate on responsibilities of clinical pharmacist in hospital patient care areas.
- What is systemic approach in answering queries received in drug information centre?
- Write notes on causality assessment in adverse drug reaction.

**SECTION-C**

- Define drug utilization evaluation (DUE). Describe the DUE cycle and mention the role of a clinical pharmacist in DUE
- Discuss the activities of clinical pharmacist in a multispecialty hospital.
- Discuss the laboratory test and interpretation of haematological disorders.



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Roll No.

Total No. of Questions : 12

Pharm D (Sem-4)

HOSPITAL PHARMACY

Subject Code : 4.2/PD-402T-19

M. Code : 71570/93761

Date of Examination : 05-06-2023

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTION TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write briefly :

- Give examples of two common fungal infections in hospitals.
- What is "lead time"?
- What is a narcotic?
- What is the difference between SVP and LVP?
- Define 'cool' and 'room' temperature storage conditions.
- What is a radioisotope?
- Define soft gelatin capsules and mention their limitations.

**SECTION-B**

- Write briefly about the duties of a hospital pharmacist.
- Write a note on Pharmacy and Therapeutic Committee.
- Explain the procedure for developing therapeutic guidelines.

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- What is meant by 'safety stock'? How it is maintained?
- Write a note on sterile supply services in a hospital.
- Give an overview of the manufacture of sterile formulations in a hospital.
- Mention the precautions to be taken while handling radiopharmaceuticals.
- Give an overview of the EOQ method.

**SECTION-C**

- Discuss various methods used for financial management in a hospital.
- Discuss the floor stock method for drug distribution in a hospital.
- What is the difference between 'diagnostic' and 'therapeutic' radiopharmaceuticals? Discuss the warehousing conditions and precautions to be told to the patient for radiopharmaceuticals.



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10. Discuss various methods used in the management of acute renal failure.
11. Explain the pathophysiology and management of hypertension.
12. Write the pharmacological and non-pharmacological management of dyslipidaemia.
13. Enumerate the various types of insulins and explain the insulin regimens in the management of type I diabetes mellitus.
14. Explain different Pulmonary function tests.
15. Explain the general guidelines for the rational use of antibiotics

#### SECTION-C

16. Classify Respiratory tract infections. Explain the management of any three upper respiratory tract infections.
17. Define tumor. Classify tumors with their diagnostic features. Describe the general principles of cancer chemotherapy.
18. Explain in detail about etiology, pathophysiology, clinical manifestations and management of chronic open angle glaucoma.



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Pharm.D (Sem-4)  
**CLINICAL TOXICOLOGY**  
Subject Code : 4.6 / PD406T-19  
M Code : 71574 / 93765  
Date of Examination : 07-06-2023

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTION TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Write on the following :
  - Enlist antidotes for treatment of various heavy metal's poisoning.
  - Define drug abuse and dependence.
  - Define mycotoxins and endotoxins.
  - Write the mechanism of action of naloxone for treatment of opiate poisoning.
  - Write the mechanism of action of deferoxamine for treatment of iron poisoning.
  - Enlist clinical symptoms of NSAIDs poisoning.
  - Enlist clinical symptoms of benzodiazepines poisoning.

**SECTION-B**

- Describe general principles involved in the management of poisoning.
- Briefly describe the role of supportive care in poisoning management.

- Describe the need and various methods of elimination enhancement
- Describe the clinical sign and symptoms of drug abuse and dependence
- Describe the need, process and significance of gut decontamination for management of poisoning.
- Describe the significance of toxicokinetics in management of poisoning.
- Describe the clinical signs and symptoms of arsenic poisoning.
- Describe the symptoms and clinical lab investigations for diagnosis of poisoning due to organo-phosphorous compounds.

**SECTION-C**

- Describe clinical signs, symptoms & therapeutic management of paracetamol poisoning.
- Describe clinical signs, symptoms and therapeutic management of chronic poisoning with heavy metals mercury and lead.
- Describe clinical signs, symptoms and therapeutic management of radiation poisoning.



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Pharm.D. (Sem-4)  
**BIOPHARMACEUTICS AND PHARMACOKINETICS**  
Subject Code : 4.5 / PD-405T 19  
M.Code : 71573/93764

Date of Examination : 02-06-2023

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTION TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write briefly :

- What is total clearance and organ clearance?
- What is zero order drug release and its advantages?
- What is pinocytosis?
- What is the difference between single and double blind clinical trial?
- Give two examples each of acidic and basic plasma proteins.
- What is MRT?
- Define volume of distribution and its units.

**SECTION-B**

- Write briefly about the pharmaceutical factors influencing drug absorption.
- Explain AUC, MRT, MAT and MDT.

- Explain with the help of suitable equations the pharmacokinetics of a drug in plasma after oral administration that follows one compartment open model.
- $T_{1/2}$  of a drug is 6 hr. Dose of 200 mg is given by IV bolus injection. what % of drug is lost in 24 hr.
- Write a note on drug distribution and factors influencing it.
- Enumerate the reasons for non-linear pharmacokinetic behavior of drugs.
- Giving examples, explain Phase-II reactions responsible for drug metabolism.
- Explain the differences between active and facilitated drug transport.

**SECTION-C**

- What is bioavailability? Explain the requirements mentioned for a typical bioequivalence protocol.
- What is Sigma-Minus method? Explain the method of calculating the elimination rate constant by this method with the help of suitable equations.
- What is meant by  $K$  and  $K_e$ ? Discuss the factors influencing drug elimination.



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**Pharm. D. (Post Baccalaureate) (Sem.-4)  
BIOPHARMACEUTICS AND PHARMACOKINETICS**

Subject Code : PD405T19

M. Code : 78151

Date of Examination : 09-06-23

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Define Half life and Cmax.
2. What do you signify by Fick's first law?
3. Describe the significance of Biopharmaceutics study.
4. Enlist the aspect affecting drug distribution.
5. Differentiate among active diffusion and passive diffusion.
6. Define drug elimination.
7. What do you about bioavailability?

**SECTION-B**

8. Define protein binding of drug. Explain binding of drug to a range of plasma proteins.
9. Describe different physiological barriers to distribution of drug.
10. Give a brief description on mechanisms of drug absorption?

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11. Mention about the biotransformation of drugs
12. Describe the in-vitro drug dissolution models
13. Give a brief about Michaelis-menten method for estimating parameters
14. What do you know about bioavailability study protocol?
15. Mention about statistical moment theory.

**SECTION-C**

16. Discuss in brief the pharmacological factors affecting drug absorption
17. Mention in detail about the non-compartment model with justified equation
18. Discuss in detail about the factors effecting non-linearity



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Pharm. D (Sem.-4)  
**PHARMACOTHERAPEUTICS-III**  
Subject Code : 4.1 / PD401T-19  
M.Code : 71569 / 93760  
Date of Examination : 09-06-23

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTION TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contains EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Write briefly :
  - Write the mechanism of action of pantoprazole.
  - What is Alzheimer's disease? Name a drug for this condition.
  - Describe symptoms of obsessive-compulsive disorder.
  - Define unipolar and bipolar depression.
  - Write four major clinical symptoms of Petit-Mal epilepsy.
  - Write the mechanism of action of gabapentin for neuropathic pain.
  - Enlist drugs for causing drug induced liver disorders.

**SECTION-B**

- Classify anti-Parkinson's and anti-Alzheimer's drugs.
- Describe etiological factors for causing migraine.

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**SECTION-C**

- Classify anaemias. Briefly describe therapeutic management of pernicious anaemia.
- Describe pharmacotherapeutic management of peptic ulcers.
- Describe various pain-pathways and therapeutic management of neuropathic pain.

- Describe therapeutic management of inflammatory bowel disease.
- Briefly describe pathophysiology of stroke.
- Describe the significance of benzodiazepines for treatment of epilepsy.
- Describe the clinical lab investigations for diagnosis of viral hepatitis C.
- Describe the clinical signs and symptoms of Schizophrenia.
- Describe the clinical lab investigations for diagnosis of venous thromboembolism.



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Pharm. D (Sem.-4)

**PHARMACOTHERAPEUTICS-III**

Subject Code : 4.1 / PD401T-19

M. Code : 71569 / 93760

Date of Examination : 09-06-23

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTION TO CANDIDATES :** Attempt any FIVE questions. Each

1. SECTION-A contain SEVEN questions. Attempt any TWO marks each. SECTION-A will carry TWO marks each. Attempt any SIX

2. SECTION-B contains EIGHT questions (Short Essay Type). Attempt any TWO

3. SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO

questions. Each question will carry FIFTEEN marks.

4. SECTION-D contains THREE questions (Long Essay Type). Attempt any TWO

questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write briefly :

- Write the mechanism of action of pantoprazole.
- What is Alzheimer's disease? Name a drug for this condition.
- Describe symptoms of obsessive-compulsive disorder.
- Define unipolar and bipolar depression.
- Write four major clinical symptoms of Petit-Mal epilepsy.
- Write the mechanism of action of gabapentin for neuropathic pain.
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**SECTION-B**

- Classify anti-Parkinson's and anti-Alzheimer's drugs.
- Describe etiological factors for causing migraine.

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- Describe therapeutic management of inflammatory bowel disease.
- Briefly describe pathophysiology of stroke.
- Briefly describe benzodiazepines for treatment of epilepsy.
- Describe the significance of investigations for diagnosis of viral hepatitis.
- Describe the clinical lab investigations for diagnosis of Schizophrenia.
- Describe the clinical signs and symptoms of Schizophrenia.
- Describe the clinical lab investigations for diagnosis of various thromboembolism.
- Describe the clinical lab investigations for diagnosis of various thromboembolism.

**SECTION-C**

- Classify anaemias. Briefly describe therapeutic management of pernicious anaemia.
- Describe pharmacotherapeutic management of peptic ulcers.
- Describe various pain-pathways and therapeutic management of neuropathic pain.



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11. Elaborate on pain management and pain pathways.
12. Write notes on schizophrenia and its management.
13. Elaborate on role of pharmacist in evidence based medicine
14. Write notes on theories on pathogenesis of schizophrenia.
15. Elaborate on pharmacological and life style management gastro esophageal reflux disease.

#### SECTION-C

16. Describe the pathophysiology, clinical manifestations and pharmacotherapy of viral hepatitis including jaundice
17. Discuss in detail the pathogenesis of peptic ulcer disease. Give an account on clinical signs and symptoms-and investigations involved in diagnosis of peptic ulcer disease.
18. Elaborate on etiology of various types of anemia and treatment of megaloblastic anemia



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11. Elaborate on pain management and pain pathways.
  12. Write notes on schizophrenia and its management.
  13. Elaborate on role of pharmacist in evidence based medicine
  14. Write notes on theories on pathogenesis of schizophrenia.
  15. Elaborate on pharmacological and life style management gastro esophageal reflux disease.
- SECTION-C**
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SECTION-B

- Describe various methods of Data Presentation.
- Describe method of sample size determination for simple comparative experiments.
- Explain steps involved in designing methodology for a research project.
- Write a detailed note on Measures of Dispersion.
- Given the bivariate distribution shown in Table 1, in which both X and Y are random variables. Compute the correlation coefficient.

Number	X	Y
1	50	20
2	54	19
3	56	23
4	63	18
5	53	20
6	49	21
7	52	18
8	58	17
9	46	16
10	45	25

- Discuss the applications of computer system in hospital pharmacy for the management of Patient Record Database.
- Describe the role of Computer system in maintaining Patient Medication Profiles.
- For the frequency distribution of weights of sorghum ear-heads given in table below, calculate the Mean, Median and Mode.

Weights of ear heads (in g)	No of ear heads (f)
60-80	22
80-100	38
100-120	45
120-140	35
140-160	24

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12. a) A sample was collected from each of the three geographically isolated populations of a certain species of bird. The bill length of each specimen was measured to the nearest tenth of a millimeter, yielding the data in table below. Analyze the data for statistically significant differences among the populations by applying one-way ANOVA.

A	B	C
4.2	3.8	3.0
3.3	4.1	3.5
2.8	5.0	4.5
4.3	4.6	4.4
3.7	5.1	
4.5		
3.6		

- b) Write a note on Wilcoxon Rank Sum Test.

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11. Give a detailed account of sample size determination.
12. Write a note on role of computer in drug information services & hospital/community pharmacy.
13. Differentiate between parametric test and non-parametric test with examples in each.
14. What are different type I and type II errors? How we can reduce the type I and type II errors?
15. Define relative and attributable risk. Write a note on statistical methods used in epidemiology.

#### SECTION-C

16. To carry out one factor analysis of variance of the given observations of three different groups of student performance in grades. Find out the mean difference between the groups and state the hypothesis, [alpha level:  $0.05 = F = 5.41J$ ]

Group A	Group B	Group C
3	3	4
4	4	2
5	3	4

17. a) Define students T test. Write the significance and assumptions of student T-tests with example.  
b) Scientists want to evaluate a new molecule against IQ score. In population average mean IQ score ( $\mu$ ) = 200, Sample size they took ( $n$ ) = 65, Mean score of sample size ( $\bar{x}$ ) = 130, Standard Deviation ( $S$ ) = 12 with an Alpha ( $\alpha$ ) = 0.05. Calculate one sample statistics for the given observations.
18. Define Sampling. Discuss the various sampling methods with appropriate pharmacy examples.

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Pharm.D. (Sem.-3)  
**MEDICINAL CHEMISTRY**  
Subject Code : PD305T-19  
M.Code : 92169

Date of Examination : 17-05-2023

Max. Marks : 70

Time : 3 Hrs.

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Name any two fungal agents and draw their chemical structures.
- What is anticoagulant? Give any two examples with their structures.
- Give the types of cardiovascular agents.
- Define Diuretics. Write the general structure of Thiazide Diuretics.
- Give the basic chemical structure of Penicillin.
- Define QSAR. Give its applications.
- What are two major limitations of CADD?

**SECTION-B**

- Discuss the mechanism of action of antibiotics in detail.
- What are hypoglycemic agents? Give chemical structures and uses of any two hypoglycemic agents.

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- Describe the mechanism of anti-arrhythmic agents.
- Write a short note on iodinated diagnostic agents.
- Classify anti-neoplastic agents on category and structural basis.
- Classify anti-malarials with examples. Write synthesis of chloroquine.
- Give the structure and biosynthesis of T4 and T3 thyroid hormones.
- Describe the mechanism of action of sulphonamides for anti-bacterial activity. Write the synthesis of sulfadiazine.

**SECTION-C**

- a) Give a brief account on antiviral agents.  
b) What are HIV protease inhibitors? Give the structure of any two HIV protease inhibitors.
- Discuss the structures, uses and doses of anti-anginal agents and vasodilators.
- Classify Diuretics. Explain the mechanism of action and structure of any one drug from each class.



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Pharm. D (Sem-3)

### PHARMACEUTICAL FORMULATIONS

Subject Code : PD-306T-19

M.Code : 92170

Date of Examination: 26-05-2023

Time : 3 Hrs.

Max. Marks : 70

#### INSTRUCTIONS TO CANDIDATES :

- SECTION-A contains SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contains EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

#### SECTION-A

- Define followings (any five)
  - Diluents with examples
  - Coating agents with examples
  - Soft gelatin capsules
  - Sterilization
  - Jellies
  - Implants
  - Creaming in emulsions.

#### SECTION-B

- Write a brief note on quality control tests for soft gelatin capsules.
- Differentiate between suspensions containing diffusible and indiffusible solids.
- Write about sterilization methods used to sterilize small volume parenteral.

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- Discuss with diagram about anatomy of skin in regard to transdermal formulations.
  - Classify suppository bases with examples.
  - Write in detail about isotonicity of pharmaceutical solutions.
  - Discuss with schematic diagram about production of gelatin.
  - Write a note on oocysts.
- #### SECTION-C
- Discuss in detail about layout of formulations of large volume parenteral.
  - What are ointment bases? Classify them with examples. Discuss in detail about fusion method of preparation of ointments.
  - What are Transdermal Drug Delivery Systems? Diagrammatically explain different parts of TDDS.

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Total No. of Questions : 18

Pharm.D. (Sem.-3)  
**PHARMACOLOGY-II**  
Subject Code : PD301T-19  
M. Code : 92165

Date of Examination : 29-05-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contains EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

Write briefly :

- What is the role of vitamin B<sub>12</sub> in our body?
- Give two examples of P<sub>2</sub>Y<sub>12</sub> receptor blockers.
- Define lepra reactions.
- Differentiate between quinolones and fluoroquinolones.
- What are transcription factors?
- What are supra infections?
- Give examples of anti-retroviral agents.

**SECTION-B**

- Discuss antibiotics used as antineoplastic agents.
- Give a detailed note on biosensors.



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- Write the MOA, side effects and uses of chloramphenicol.
- Explain the life cycle of malarial parasite.
- Describe the MOA, side effects and uses of Co-trimoxazole.
- Write a brief note on chronic toxicity studies.
- Write a short note on azole anti-fungal agents.
- Discuss briefly about the process of protein synthesis.

**SECTION-C**

- What are diuretics? Classify them and describe the mode of action, side effects and uses of furosemide.
- Describe the complete process of absorption, transportation, utilization and storage of Iron.
- Classify penicillins and discuss mechanism of action and side effects of penicillins.

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10. What is hyperlipidemia? Write the pharmacological treatment of hyperlipidemia.
  11. Write notes on general prescribing guidelines for geriatric patients.
  12. What is atherosclerosis? Explain the development of atherosclerosis.
  13. Write notes on COPD and its management.
  14. Brief note on pharmacotherapy of bacterial and viral conjunctivitis.
  15. Write a note on hormone replacement therapy.
- 
16. Write the etiopathogenesis and pharmacotherapy involved in bronchitis and emphysema.
  17. Define rational drug use and add a note on role of pharmacist in rational drug use.
  18. Define congestive cardiac failure. Write the etiology, clinical manifestations, pathophysiology and management of CCF.

#### SECTION-C



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11. What are the health screening services?
12. Explain the response to symptoms of minor ailments.
13. What are the major key points in community pharmacy management?
14. What is the role of pharmacist in the treatment & prevention of deficiency disorder family planning?
15. What are the patient's information leaflets?

#### SECTION-C

16. Explain the prescription in diagrammatical form. Also, explain the parts of the prescription.
17. Explain the code of ethics for community pharmacists
18. What is the role of WHO in health promotions, care for children, pregnant & breast-feeding women and geriatric patients?



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10. Write the diagnostic test for typhoid and its applications.
11. Diagrammatically explain the electron microscope and its types.
12. Write methods for sterility testing of ophthalmic formulations according to IP.
13. What are the different methods of microbial assay of antibiotics?
14. Write various methods for the isolation of bacteria.
15. Write a note on hepatitis.

#### SECTION-C

16. Discuss in detail the evaluation of disinfectant by phenol coefficient method.
17. Classify the mechanical and gaseous methods of sterilization.
18. a) Explain total and viable counting techniques of bacteria.  
b) Difference between active and passive immunity.



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Pharm.D (Sem.-3)  
**PHARMACEUTICAL ANALYSIS**  
Subject Code : PD302T-19  
M.Code : 92166  
Date of Examination : 19-05-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contains SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contains EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Define total quality management.
- Define ICH guidelines.
- Define Karl fisher titration.
- Write down the principle and application of HPLC.
- Write applications of the conductometry.
- Describe in details about flame photometry.
- Define Beer-Lambert's Law.

**SECTION-B**

- Write down the introduction, theoretical aspects, and application of NMR spectroscopy.
- Write different techniques and applications of X-ray diffraction.
- Write down the Beer-Lambert Law with application and its deviation.

- Describe instrumentation, DME, residual current, and application of polarography.
- Explain principle and applications of DSC.
- Explain working principle and various detectors used Gas chromatography.
- Describe sources and control of quality variation with the details about statistical quality control.
- Explain fluorimetric analysis with factors affecting fluorescence and applications.

**SECTION-C**

- Define ICH guidelines. Explain Q2(R1) guideline and its parameters.
- Write down the instrumentation and applications of UV-Visible spectrophotometer.
- Discuss about HPTLC with instrumentation and its applications.



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Total No. of Pages : 02

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Pharm.D (Sem-1)  
**HUMAN ANATOMY & PHYSIOLOGY**

Subject Code : PD101T-19

M.Code : 78159

Date of Examination : 09-06-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write about :
  - a) What is neurotransmitter? Give two examples.
  - b) What are necessary organs of digestive system?
  - c) What is total lung capacity?
  - d) Highlight various functions of the kidneys.
  - e) What is ATP?
  - f) Give reasons of hypoxia.
  - g) Give anatomical location of pituitary gland.

**SECTION-B**

2. Write a short note on basal ganglia.
3. Outline oogenesis in detail.

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4. Draw a well labeled diagram of neuron and explain the various parts of neuron.
5. Draw and label human eye.
6. Write a note on hormones released from adrenal cortex.
7. Write the role of bile in fat digestion and absorption.
8. How is lymph formed? What are the different lymphatic organs and tissues?
9. What are the bones present in the appendicular skeletal system?

**SECTION-C**

10. Enlist the various parts of the gastrointestinal tract and discuss in detail, about physiology of food digestion.
11. Mention organs of the respiratory system and describe regulation of respiration, in detail.
12. Write a detailed note on blood pressure regulation.

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Total No. of Questions : 18

Pharm.D (Sem.-2)  
**PHARMACOLOGY-I**  
Subject Code : PD-204T-19  
M. Code. : 80145

Date of Examination : 25-05-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. What are spare receptors?
2. Give limitations of non-selective  $\beta$ -b blockers.
3. What is torsade de pointes?
4. Define with examples "agonist" and "antagonist".
5. What is therapeutic index? Indicate its significance.
6. What is the use of disulfiram?
7. What is grandmal epilepsy? Name two drugs for this condition.

**SECTION-B**

8. Write a short note on MAO inhibitors.
9. Write a short note on Para sympatholytics.
10. Discuss various factors affecting drug absorption.

11. Write a note on various routes of drug administration.
12. Write a note on gaseous anaesthetic agents.
13. Discuss briefly about the opioid analgesics.
14. Write a note on oral contraceptives.
15. Write the pathophysiological role of histamine.

**SECTION-C**

16. Classify antidepressants. Discuss the pharmacology of SSRIs and SNRIs.
17. Classify antihypertensives. Describe the complete pharmacology of Diuretics as antihypertensives.
18. Classify antithyroid drugs. Explain the synthesis, storage and release of thyroid hormones.



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Total No. of Questions : 12

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Pharma D. (Sem-1)

**PHARMACEUTICAL ORGANIC CHEMISTRY**

Subject Code : PD104T-19

M.Code : 78162

Date of Examination : 07-06-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write briefly :

- What do you understand by aprotic molecules with examples?
- What do you understand by optical activity?
- Write freidal craft reaction.
- Write the mechanism of action of Diazonium salts.
- Explain Halogenation along with examples.
- Give the mechanism of action of Kolbes reaction.
- What are Nucleophilic addition reactions?

**SECTION-B**

- Write a note on acidity of phenols?
- What is isomerism? Explain its types

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- Explain the role of solvent in substitution reaction.
- What do you understand by Reimer-Tiemer reaction?
- Write a note on Perkin reactions.
- Explain qualitative test of proteins.
- Write a note on Diazotization reaction.
- Write electrophilic addition reaction of alkenes.

**SECTION-C**

- Explain in detail Baeyer strain theory.
- Write a detailed note on SN1 and SN2 reactions.
- Write a note on :
  - Schotten Bauman reaction
  - Liebermann's Nitrosation reaction.



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Total No. of Questions : 12

Pharma. D. (Sem-1)  
**MEDICINAL BIOCHEMISTRY**  
Subject Code : PD103T-19  
M.Code : 78161  
Date of Examination : 05-06-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write briefly :

- a) What is the role of ATP in biological systems?
- b) What are the different types of transport mechanisms that operate across the cell membrane?
- c) What are some factors that can affect enzyme activity?
- d) What are the key differences between the citric acid cycle and the HMP shunt?
- e) What are some of the key enzymes involved in fatty acid and lipid biosynthesis?
- f) What is nitrogen balance, and how is it calculated?
- g) What is urine analysis and why is it important?

**SECTION-B**

2. What is the biochemical organization of a cell and how does it relate to transport processes across the cell membrane?

3. Enzyme inhibition is an important regulatory mechanism. Discuss the different types of enzyme inhibition and their biological significance.
4. Hormonal regulation plays a key role in lipid metabolism. Discuss the different hormones involved in the regulation of lipid metabolism, including their mechanisms of action and physiological effects.
5. Explain at least one test for hepatic function and one for dysfunction.
6. Define Lipoproteins with their composition and functions.
7. Explain the principle of ELISA, including the different types of ELISA and the key steps involved in the assay.
8. Explain the urea cycle and its metabolic disorders.
9. Define the terms :
  - a) Hyperbilirubinemia
  - b) Porphyrias
  - c) Jaundice.

**SECTION-C**

10. Describe the Krebs's Cycle or Tricarboxylic acid cycle.
11. Define enzyme. Classify them and describe the factors affecting enzyme activity
12. Explain the semi-conservative replication of a double-stranded DNA molecule. Add note on its mechanism.



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Pharma. D. (Sem-1)  
**PHARMACEUTICAL INORGANIC CHEMISTRY**

Subject Code : PD105T-19

M.Code : 78163

Date of Examination : 02-06-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

- SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
- SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
- SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Write Briefly :

- What do you understand by indicators? Explain with examples.
- What do you understand by end-point detection?
- What are Acidifiers? Illustrate with examples.
- What is precipitation titration?
- Explain the principle of complexometric titration?
- Give the classification of antacids.
- What do you understand by Iodimetry.

**SECTION-B**

- Write a note on errors. Explain its types.
- What is a Dental product? Explain the role of Fluoride.

- Explain the role of magnesium hydroxide in cathartics.
- What do you understand by essential trace elements?
- What is an antidote? Explain the role of Charcoal.
- What are antimicrobial agents? Explain hydrogen peroxide in detail.
- Explain the limit test of arsenic.
- Explain Handerson-Hasselbatch equation.

**SECTION-C**

- Explain in detail Radiopharmaceuticals?
- Write a detailed note on dentifrices. Illustrate with examples.
- Write a detailed note on gravimetric analysis.



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Pharm.D (Sem-1)  
**PHARMACEUTICS**  
Subject Code : PD102T-19  
M.Code : 78160  
Date of Examination : 30-05-2023

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

1. Define followings (any five) :

- a. Prescription.
- b. Allegation method of calculations
- c. Effervescent granules
- d. Organoleptic additives
- e. Suppository bases
- f. Infusions .
- g. draughts

**SECTION-B**

2. Write about the different types of semisolid dosage forms with examples.
3. Write a brief note on development of Indian Pharmacopocia.

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4. Write about history of profession of pharmacy in India.
5. What are the different factors which affect the dose selection?
6. Write in brief about isotonic solutions and discuss the effect of non-isotonic solutions on blood cells.
7. Differentiate between powders and granules.
8. Differentiate between diffusable and in diffusable solids.
9. Briefly discuss therapeutic incompatibilities.

**SECTION-C**

10. Describe the different types of physical incompatibilities along with examples and methods to overcome them.
11. What are suppositories? Discuss their advantages and disadvantages over solid dosage form. What is role of displacement value in formulation of suppositories?
12. What are emulsions? Classify them with examples. Discuss the different method of their evaluation.



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