

FACULTY OF PHARMACY

B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Biostatistics & Research Methodology

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Define the terms Biostatistics & Research.
2. Mention different measures of dispersion.
3. Age of 10 patients from a population of 169 patients is 42, 28, 28, 61, 31, 23, 50, 34, 32 and 37. Calculate the range.
4. What is meant by hypothesis?
5. Mention different non-parametric tests.
6. What is the need for Research?
7. Mention different phases of clinical trials.
8. What is power of study?
9. What is SEM? Write its importance.
10. What are the advantages of factorial design?

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Discuss on report writing in research methodology.
12. What is correlation? Write about different types of correlation.
13. Explain the features of SPSS in detail

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. The relative humidity values in a tablet production department of a pharmaceutical company from Monday to Saturday were recorded as 60, 62, 65, 69, 75 and 65. Calculate standard deviation.
15. Explain different types of probability distributions.
16. Write about t-Test with an example.
17. Discuss on design of experiments.
18. Explain the features of MINITAB in brief.

19. The following figures shows disease count from a region over a span of 6 months. Represent the data by a pie-diagram.

Disease	Disease Count
HIV	17
Malaria	28
Diarrhoea	30
Tuberculosis	25
Influenza	20

20. Write Wilcoxon- Rank Sum Test with an example.
21. Explain 2^2 factorial design.
22. Give informative notes on response surface methodology.

FACULTY OF PHARMACY

B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025

Subject: Cell and Molecular Biology (Elective-II)

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the question.

(10 x 2 = 20 Marks)

1. Enlist the types of RNA
2. What is difference between translation and transcription?
3. Enlist the functions of Okasaki fragments
4. What is cell membrane?
5. Define mitosis
6. Define meiosis
7. Enlist the units of gene
8. Differentiate between animal cell and plant cell
9. What are microtubules?
10. Define nucleotides

PART - B

Note: Answer any two question.

(2 x 10 = 20 Marks)

11. Discuss in detail history of cell molecular biology.
12. Describe in detail the chemical foundations of cell biology.
13. Describe in detail mechanism of cell cycle.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Explain the cellular membrane structure and function.
15. Describe in detail about process of cell division.
16. Write a short note on dark excision repair system of DNA.
17. Write a short note on structure and function of lysosomes.
18. Explain in brief the types of mRNA and their function.
19. Write short notes on organization and function of nucleus.
20. Write down the functions of mitochondria in animal cells.
21. Write a short note on Transgenics and genomic analysis.
22. Write in brief regularities in protein pathway.

FACULTY OF PHARMACY

B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Cosmetic Science (Elective-II)

Time: 3 Hours

Max.Marks:75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Define Cosmetic and Cosmeceuticals.
2. Write a note on cosmetics as Quasi and OTC drugs.
3. Write a note on Hair dyes.
4. Write a note on mouth washes.
5. Write the uses of henna in hair care.
6. Write a note on hair tensile strength.
7. Differentiate between soaps and syndet bars.
8. Write a note on hair combing properties.
9. Write a note on Blemishes and Wrinkles.
10. Write the reasons for bad body odour.

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Draw basic structure of skin and its functions. Write the formulation of Moisturizing cream Cold Cream and Vanishing cream.
12. Write the role of following herbs in cosmetics (i) Aloe (ii) Turmeric (iii) Neem and (iv) Clove.
13. (a) Write a note on oily and dry skin. Write causes and preventions for dry skin.
(b) Write formulation and mechanism of action of Antiperspirants & deodorants.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Write the classification of cosmetics and cosmeceuticals with examples.
15. Write a note on evolution of cosmeceuticals from cosmetics.
16. Write a note on basic structure of hair and hair growth cycle.
17. Write a note on conditioning shampoo, antidandruff shampoo in hair care.
18. Write the formulation of toothpaste for bleeding gums and sensitive teeth for oral care.
19. What is SPF? Classify the sunscreen formulations with examples.
20. Write a note on evaluation of Shampoo and Skin cream as per BIS specifications.
21. Write the principles and applications of Sebumeter and Corneometer.
22. Write a note on dandruff and causes for hair fall.

FACULTY OF PHARMACY

B. Pharmacy (CBCS) VIII - Semester (PCI) (Main & Backlog) Examination, July 2025

Subject: Advanced Instrumentation techniques (Elective – II)

Time: 3 Hours

Max Marks: 75

PART – A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. What are the uses of MS.
2. What type of nucleus can be studied by NMR spectroscopy? Give examples.
3. What is the internal standard in NMR spectroscopy? Justify its selection.
4. What is the difference between HPTLC & HPLC.
5. What are the differences between ^1H -NMR and ^{13}C -NMR?
6. What is the principle involved in the calibration of electronic balance?
7. Write Bragg's equation and explain the terms. What are the ionisation methods used in MS.
8. Briefly explain the principle of DTA.
9. What are different modes of vibration of molecules in IR.
10. What is meant by solid phase extraction (SPE)? List the important steps in SPE.

PART – B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Explain the principle and instrumentation of LC/MS/MS.
12. Explain the principle of NMR spectroscopy. With a labelled diagram, explain NMR instrumentation.
13. Explain the instrumentation of HPTLC/MS and applications.

PART – C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. What is the principle of TGA? With a neat labelled diagram explain the instrumentation of TGA.
15. Define chemical shift. What are the factors affecting chemical shift?
16. With the help of a suitable example, explain the phenomena of spin-spin coupling.
17. Explain the origin of X-rays. Classify the different types of crystals.
18. Give MS instrumentation diagram. Explain the steps in MS.
19. Explain FAB and MALDI in MS.
20. What is the principle of radioimmuno assay? Add a note on the advantages, limitations and applications of RIA.
21. Explain the calibration of UV- Visible spectrophotometer.
22. What is meant by fragmentation? Explain the fragmentation rules in MS.

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B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Experimental Pharmacology (Elective-II)
(Pharmacological Screening Methods)

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. What are common laboratory animals?
2. Write the composition of IAEC.
3. Enlist various techniques of blood collection in common laboratory animals
4. What is one way ANOVA?
5. List out screening methods for drugs acting on eye.
6. Write about Mutant animals.
7. What are nootropics?
8. What is the importance of sham negative and positive control groups?
9. Write about Euthanasia?
10. What are parametric and non-parametric tests?

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Write a note on CPCSEA guidelines for performing experiments on animals. Describe in detail about requirement for IAEC permission on animal studies.
12. Describe the screening models for evaluation of a compound for Antihypertensive drugs.
13. Write in detail about the methods of screening for antihypertensive and anti arrhythmias.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Write a note on *in vivo* methods for screening of antiepileptic drugs.
15. What is Research? Mention the significance of selection of research topic.
16. Describe various routes of drug administration in animals with advantages and disadvantages.
17. Write a brief note on screening methods of analgesic drugs.
18. Explain the applications of transgenic animals in pharmacological research.
19. Write any two preclinical screening methods for antidepressant activity.
20. Explain the screening methods for diuretics.
21. Explain the criteria of dose selection and calculations of dose for animals.
22. Explain the interpretation of results using Students-t test?

FACULTY OF PHARMACY**B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025****Subject: Dietary Supplements and Nutraceuticals (Elective-II)****Time: 3 Hours****Max. Marks: 75****PART - A****Note: Answer all the questions.****(10 x 2 = 20 Marks)**

1. Define flavonoids and polyphenolics.
2. Write the benefits of Public health nutrition.
3. Write short notes on Reactive Oxygen Species.
4. Give the occurrence and medical benefits of Lignans and Rutin.
5. Explain the importance of anti-oxidants.
6. Write about complex carbohydrates as functional food ingredients.
7. Give the source, chemical nature and uses of Tea and coffee.
8. Explain about non-enzymatic antioxidant defence.
9. Name the marker compounds of soyabean and flax seeds.
10. Write about FDA on food safety.

PART - B**Note: Answer any two questions.****(2 x 10 = 20 Marks)**

11. Explain in detail the effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.
12. (a) Explain the role of antioxidants in the treatment of Cancer.
(b) Write about various nutritional education in a community.
13. (a) Explain various functional foods for chronic disease prevention.
(b) Explain various mechanisms of free radicals involved in the treatment of disorders.

PART - C**Note: Answer any seven questions.****(7 x 5 = 35 Marks)**

14. Write in detail about dietary fibres.
15. Explain the role of various endogenous anti-oxidants.
16. Explain in role of free radicals in brain metabolism.
17. Explain the effect of environmental factors in the potential of entioxidants.
18. Give the importance of proteins and vitamins as functional foods.
19. Give the occurrence, chemical nature and uses of Ginseng and Spirulina.
20. Explain the regulatory aspects of GMP's on food safety.
21. Explain the chemical nature and medical benefits of Resveratrol and tocopherols.
22. Define carotenoids and give the source and medicinal benefits of any two carotenoids.

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B. Pharmacy (PCI) VIII – Semester (Main & Backlog) Examination, July 2025

Subject: Pharmaceutical Marketing Management (Elective-I)

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Differentiate between marketing and selling
2. Mention the parameters to be considered for competitive analysis.
3. What is product mix and mention its importance.
4. Mention the benefits and limitations of medical exhibition in promotion.
5. Write the role of journals in product promotion.
6. Write advantages and disadvantages of wholesalers.
7. Mention the future roles of professional sales representatives.
8. What is vertical marketing?
9. Write the differences in advertising and publicity.
10. Write the objectives of pricing.

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Describe the qualifications and duties of professional sales representative.
12. Write the overview of DPCO and its importance in pharmaceutical marketing management.
13. Explain the stages of product life cycle and mention their impact on branding and product decisions.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Describe the qualitative and quantitative aspects of pharmaceutical marketing.
15. Describe the factors influencing the motivation and prescribing habits of physician.
16. What is market research and describe its role in pharmaceutical marketing management.
17. Explain factors affecting new product decisions and product positioning.
18. Write the online promotional techniques for OTC products and mention the regulations applicable to them.
19. Describe the strategic importance of pharmaceutical marketing channels.
20. Write the approaches of motivation and compensation planning for professional sales representative.
21. Write factors to be considered for fixation of price.
22. Compare and contrast rural marketing and industrial marketing.

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B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Pharmaceutical Regulatory Science (Elective - I)

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Write a short note on drug master files.
2. Define IND, regulatory authority.
3. What is Three arm study?
4. Explain Investigational Product
5. Explain orange book.
6. Write a note on clinical studies.
7. Explain how to manage and monitor clinical trials.
8. Explain generic drug product development.
9. Explain Australia regulatory authority.
10. Write about innovator and generics.

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Write about the regulatory approval process involved in investigational new drug
12. Explain the organization and functions of regulatory bodies of EU and Japan.
13. Describe Informed consent process and procedures in clinical trials.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Discuss about regulatory requirements for Generic drug approval process as per ASEAN region.
15. Discuss about ACTD.
16. Describe GCP guidelines.
17. Explain independent ethics committee.
18. Explain the organization structure and functions of Japan drug regulatory body.
19. Explain the Purple Book features.
20. With suitable example differentiate between brand and generic products.
21. Write a note on different modules of DMF.
22. Discuss the criteria for selection of human volunteers in clinical trials.

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B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Pharmacovigilance (Elective - I)

Time: 3 Hours

Max. Marks: 75

PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Briefly explain pharmacovigilance program of India (PvPI).
2. Give the Types of services provided by CROs.
3. What are the objectives of pharmacovigilance planning?
4. Write about vaccination failure.
5. Define the terms a. cohort study b. cross sectional study.
6. List out factors affecting adverse effects of the vaccine.
7. Discuss the Genomic approaches to serious adverse drug reactions.
8. Mention few examples of predictable ADRs.
9. Define the terms (i) Secondary effects (ii) Abstinence syndrome (iii) Rechallenge.
10. Classify adverse events following immunization.

PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Explain the Methods for Causality, Severity and Seriousness Assessment of ADRs.
12. Discuss on differences in Indian and global pharmacovigilance requirements.
13. Explain DSUR and PSUR. Discuss in detail the structure of PSUR.

PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Discuss the Rawlin's and Thompson classification of ADRs with suitable examples.
15. Discuss the functions of Contract Research Organization
16. Write a note on vaccination failure.
17. Explain the Drug Safety Crisis management.
18. Write about post approval phase.
19. Write a note on MedDRA
20. What are the prerequisite for setting up pharmacovigilance center in a hospital?
21. Enlist the different volumes of ICD 10, outlining its contents. Write in brief the use of alphabetical index.
22. Discuss drug safety evaluation in elderly population.

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B. Pharmacy (PCI) VIII – Semester (Main & Backlog) Examination, July 2025
Subject: Computer Aided Drug Design (Elective-I)

Time: 3 Hours

Max Marks: 75

PART – A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. What are the advantages of virtual screening?
2. Write the applications of cheminformatics in drug design.
3. Write the steps involved in homology modelling of a protein.
4. What is SAR & QSAR?
5. Mention pharmaceutical databases with examples.
6. Explain the Lipinski's rule of five.
7. Write the significance of PDB in drug design.
8. What is bioinformatics?
9. What is De novo drug design?
10. What is global conformational minima determination.

PART – B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Describe the concept of pharmacophore-based virtual screening in drug design.
12. Explain in detail about various physicochemical parameters used in QSAR analysis.
13. Explain various stages involved in drug discovery and development.

PART – C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Write a note on Bioisosterism and its importance in drug design.
15. Write a note on Free-Wilson Analysis.
16. Write a note on COMFA and COMSIA for drug design.
17. Write a note on Drug likeliness screening technique.
18. Write a note on different docking methods for screening.
19. Write about ADME databases used in drug design.
20. Write the applications of bioinformatics in drug design.
21. Write a note on quantum mechanics and its applications.
22. Write about energy minimization methods and its importance.

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B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Quality Control and Standardization of Herbals (Elective-I)

Time: 3 Hours

Max. Marks: 75

PART – A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Define Stomata.
2. Difference between TLC & HPTLC.
3. Types of markers with examples.
4. Explain an Extractive value and its significance.
5. Define SOP.
6. Explain the six system inspection model?
7. Explain various examples of herbal drug interaction.
8. What is preliminary carcinogenicity study?
9. Write the WHO guidelines for safety monitoring of herbal medicine.
10. What is quality Audit?

PART – B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. Explain the different parameters in the evaluation of crude drugs.
12. Explain the export registration for pharmaceutical requirements. Discuss the role of AYUSH and D&C act provision.
13. How the chemical and biological marker helpful in standardization of herbal products.

PART – C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Write a note on good manufacturing process of herbal drugs.
15. Explain the importance of HPTLC method in the standardization of herbal drugs.
16. Write a note on regulatory requirement for herbal drugs.
17. Describe the guidelines on safety and efficacy of herbal medicine.
18. Explain WHO guidelines on current good manufacturing practices for herbal medicine.
19. Discuss about the assessment of Genotoxicity of herbal preparations.
20. Define and classify markers with examples.
21. Describe the basic test for medicinal plant material.
22. Explain ICH guidelines for the quality control of herbal drugs.

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B. Pharmacy (PCI) VIII - Semester (Main & Backlog) Examination, July 2025
Subject: Social & Preventive Pharmacy

Time: 3 Hours

Max Marks: 75

PART – A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Write a note on personal hygiene and avoidable habits?
2. What are the effects of poverty on health?
3. What is the difference between drug abuse and drug addiction?
4. Mention vitamin deficiency disorder/disease.
5. What is balanced diet?
6. What is Malnutrition?
7. What is pulse polio program?
8. Give the importance of maternal and child intervention program?
9. Write a note on school health education program?
10. What do you mean by primary health care center?

PART – B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

11. (a) Explain about Malnutrition and various methods of its prevention.
(b) Explain in detail about control and prevention of Malaria.
12. (a) Explain the objectives, functioning and outcomes of national health programme for tuberculosis.
(b) Write a note on National programme for health care of elderly.
13. (a) Add a note on control and prevention of cancer.
(b) Write a note on functions of PHC.

PART – C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

14. Explain in detail about universal immunization programme.
15. Explain signs, symptoms, transmission and treatment of dengue.
16. Define health and add a note on evaluation of public health.
17. Write a note on control and prevention of lymphatic filariasis.
18. Write a note on strategies and outcomes of National programme for control of blindness.
19. Write a note on National family welfare programme.
20. What are the functions of WHO in Indian national programs?
21. Write a brief note on improvement in rural sanitation.
22. Explain in detail about the objectives, functioning and outcomes of Pulse polio program.