JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Jurisprudence

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Discuss prohibition of import of certain drugs. Add note on import of drugs for personal use and approved places in India for import of drugs through rail, sea and air route. (4+3+3)
2. Explain in detail about Schedule M and Schedule N.
3. Describe in brief bonded and non-bonded manufacturing. State the provisions of offences and penalties in relation to: (7+3)
   a) Poppy straw b) Cannabis plant and Cannabis.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Discuss loan license and repacking license.
5. Write duties and qualifications of drug inspector and Govt. analysts.
6. Define cannabis and coca derivative as per NDPS Act.
7. Discuss CPCSEA guidelines for breeding and stocking of animals.
8. Write a note on calculation of ceiling price of scheduled formulation.
9. Note on Institutional Animal Ethical Committee.
10. What were the recommendations of Drugs Enquiry Committee to the Government of India?
11. Write a note on the role of pharmacist in relation to his job and trade.
12. Discuss objectives and importance of Medical Termination of Pregnancy Act.

****

QP Code: 11444

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Organic Chemistry– III

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Explain with example of the racemic modification and resolution of racemic mixture.
2. Differentiate between stereospecific and stereoselective reactions in organic chemistry.
3. Discuss the reactivity of thiophene derivatives. Provide examples of medicinal uses of thiophene derivatives and their contributions to the pharmaceutical field.

Section C

SHORT ESSAY (Answer any seven questions) **7x5=35 Marks**

4. Explain the conditions required for the compounds to obey optical activity.
5. Define and elucidate the concept of stereo isomerism, specifically atropisomerism, in biphenyl compounds.
6. Explain the concept of aromaticity and its significance in heterocyclic compounds, particularly focusing on pyrrole, furan, and thiophene.
7. Describe the synthesis of pyrazole and give examples of medicinal applications of pyrazole derivatives?
8. Explore the basicity of pyridine and factors influencing its basic properties?
9. Discuss the synthesis of azepines and their derivatives.
10. Discuss the mechanism and applications of the Beckmann rearrangement.
11. Explain the mechanism of metal hydride reductions using $NaBH_4$ and $LiAlH_4$.
12. Explain the mechanism of the Clemmensen reduction.

****

QP Code: 11445

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B Pharm (SS1) Examination – June 2025

Subject: Medicinal Chemistry - I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Describe in detail about chelation, ionization, hydrogen bonding of drugs in relation to biological action?
2. Explain the SAR of sympathomimetics. Outline the synthesis and mechanism action of phenylephrine. (5+5)
3. Classify parasympathomimetic agents with examples. Write the synthesis of neostigmine with mechanism of action and uses. (5+5)

Section C

SHORT ESSAY (Answer any seven questions) **7x5=35 Marks**

4. Define drug metabolism. Write a note on Phase II of drug metabolism with suitable examples.
5. Write the synthesis of salbutamol with mechanism of action and uses.
6. Describe the SAR of cholinolytic agents. Write the synthesis of ipratropium bromide.
7. Write a note on SAR of benzodiazepines.
8. Define anticonvulsants. Write synthesis, mechanism of action and uses of phenytoin.
9. Describe SAR of barbiturates. Write the synthesis of any one barbital.
10. Define general anesthetics. Write synthesis, mechanism of action and uses of halothane.
11. Short note on SAR of morphine analogues. Write synthesis of fentanyl citrate.
12. What are anti-inflammatory agents. Write the synthesis and mechanism of action of ibuprofen.

****

QP Code: 11446

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B Pharm (SS1) Examination – June 2025

Subject: Physical Pharmaceutics-II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Discuss the application and the limitation Arrhenius equation in the stability testing of a pharmaceutical.
2. Explain non-Newtonian type of flow with rheograms, mechanisms and suitable examples.
3. What is creaming emulsion and how is it prevented in pharmaceutical emulsions? Explain.

Section C

SHORT ESSAY (Answer any seven questions) **7x5=35 Marks**

4. Differentiate between order and molecularity of a chemical reaction.
5. Give the working principle of cone and plate viscometer with a labeled diagram.
6. Classify and describe the types of emulsions with suitable examples.
7. Explain porosity and packing arrangement of pharmaceutical powders.
8. Discuss the coulter count method of measurement of particle volume.
9. Write a note on hypothetical diameters of particle size.
10. Explain Donnan membrane equilibrium and its application.
11. Explain in detail electrophoresis and electroosmosis with their applications.
12. State Schulze–Hardy rule and explain sensitization of colloids.

****

QP Code: 11447

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B Pharm (SS1) Examination – June 2025

Subject: Pharmacology- I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Discuss the different routes of drug administration and write their advantages and disadvantages.
2. Discuss about drug interaction with example.
3. Classify parasympatholytic with examples. Write the pharmacology of atropine.

Section C

SHORT NOTES (Answer any seven questions) **7x5=35 Marks**

4. Discuss about biotransformation of drug.
5. Explain ligand gated receptors with examples.
6. Explain about Myasthenia gravis. Add a note on its treatment.
7. Classify hypnotic and sedatives. write the pharmacology of barbiturates.
8. Explain the stages of anesthesia.
9. Classify centrally acting muscle relaxants. Explain the mechanism of action of baclofen.
10. Classify narcotic analgesics with examples. Write the mechanism of action and uses of morphine.
11. Classify anti-anxiety drugs. Write the pharmacology of buspirone.
12. Write the pharmacology of lithium carbonate.

****

QP Code: 11448

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B Pharm (SS1) Examination – June 2025

Subject: Pharmacognosy & Phytochemistry - I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Explain pharmacological and chemical classification of crude drugs.
2. Explain the role of polyploidy and mutation techniques in quality improvement of medicinal plants.
3. Define plant tissue culture. Write a note on different types of culture.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write a note on the scope of pharmacognosy.
5. Explain how collection affects quality of crude drugs.
6. Write a note on edible vaccines.
7. Define and classify volatile oils with example.
8. Write a note on principles of ayurveda.
9. Write a note on role plant-based drugs in allopathic medicine.
10. Write the source, chemical constituents and uses of honey. Add a note on preparation of honey.
11. Give an account of preparation of castor oil. List the uses of castor oil.
12. Write the identification tests for acacia and agar.

****

QP Code:11449

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2025

Subject: Medicinal Chemistry- II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Define and classify antineoplastic agents with examples. Write a note on antimetabolites. Outline a method of synthesis for methotrexate.
2. Define and classify diuretics with examples. Explain the mechanism of action of thiazide diuretics. Describe the synthesis of frusemide.
3. What are antiarrhythmic agents? Classify them with examples giving structure and mechanism of action from each class. Outline a method for the synthesis of disopyramide phosphate.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write a note on the purine antagonists.
5. What are calcium channel blockers? Classify them with structures?
6. Write a note on anticoagulant agents? Outline the synthesis of warfarin.
7. Write a note on oral contraceptives. Give examples.
8. Write a note on erectile dysfunction. Give examples of drugs used with their structures.
9. Write about the nomenclature of steroidal hormones.
10. Outline the synthesis for tolbutamide and benzocaine.
11. Write a note on Sulphonylureas and glinides as antidiabetic agents.
12. Write a note on insulin and its preparations.

****

QP Code:11450

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2025

Subject: Industrial Pharmacy-I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the preformulation considerations in the development of solid and parenteral dosage forms. (5+5)
2. Define tablet coating. Explain in detail the process of sugar coating of tablets. (2+8)
3. Describe the formulation, filling and finishing techniques of hard gelatin capsules. (3+4+3)

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write notes on: a) Ionization constant b) Partition coefficient.
5. Write a note on evaluation of liquid orals.
6. Explain the manufacturing of soft gelatin capsules by rotary die process.
7. Write a note on vehicles used in parenteral preparation.
8. Explain the different methods used for sterilization.
9. Write a note on any two-evaluation test for ophthalmic preparations.
10. Explain the formulation and preparation of cold cream.
11. Discuss about filling of pharmaceutical aerosols.
12. Write a note on quality control tests for packaging materials.

****

QP Code:11451

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmacology- II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the electrophysiology of myocardium in automatic and non-automatic fibers.
2. Classify diuretics? Describe the mechanism of action and adverse effects of loop diuretics.
3. Classify anti-histaminic drugs. Write the pharmacological actions, adverse effects and therapeutic uses of promethazine.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write about the pharmacology of nitrates.
5. Discuss the pharmacology of ADH.
6. Classify anti-rheumatoid drugs with examples. Write the pharmacology of methotrexate.
7. Classify antithyroid drugs. Describe the pharmacology of propyl thiouracil.
8. Explain the mode of action and adverse effects of insulin.
9. Describe the physiological actions of glucocorticoids.
10. Explain different types of bioassays.
11. Classify uterine stimulants. Explain its importance and side effects.
12. Classify corticosteroids? Explain beclomethasone.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmacognosy and Phytochemistry - II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. a) Give the isoprenoid pathway and its significance.
   b) Explain the utilization of radioactive isotopes in biogenetic studies.
2. a) What are anthracene glycosides? Give their chemical nature and identification tests. (1+2+2)
   b) Explain the source, family, morphology, chemical constituents and uses of senna. (1+2+1+1)
3. Describe the isolation, identification test and uses of caffeine and curcumin.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain briefly the amino acid pathway.
5. What are cardiac glycosides? Give their chemistry and two identification tests.
6. Describe industrial production and estimation of artemisinin.
7. Explain industrial production, and the estimation of taxol.
8. Describe the method of isolation and uses of podophyllotoxin.
9. Give the source, industrial production and utilization of diosgenin.
10. With the help of a neat, labelled diagram explain the column chromatography for separation of phytoconstituents.
11. Discuss percolation process with its merits and demerits.
12. Write the role of gas chromatography in the separation of phytoconstituents.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Biotechnology

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Define Biosensor. Add a note on the working principle of biosensors. Explain any two types of biosensors and their application in pharmaceutical industry.
2. Describe the application of rDNA technology in the production of insulin.
3. Outline the types of hypersensitivity reaction. Explain type 3 hypersensitivity reaction.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Methods of immobilization of enzymes.
5. Polymerase chain reaction.
6. Structure of immunoglobulins.
7. Illustrate the different types of ELISA.
8. Compare and contrast the genetic organization of prokaryotes and Eukaryotes.
9. Microbial biotransformation.
10. Large scale fermenter design and various controls.
11. Production of penicillin.
12. Collection, processing and storage of dried human plasma.

****

QP Code:11454

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Medicinal Chemistry-III

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. What are beta lactam antibiotics? Classify penicillins with structural examples and explain the SAR and degradation of penicillins. (2+4+4)
2. Describe the basic concepts and applications of prodrugs.
3. Outline the synthesis of the following: (4X2.5)
   a) Isoniazid b) Para amino salicylic acid
   c) Ciprofloxacin d) Acyclovir.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write a note on aminoglycoside antibiotics.
5. Classify anti-malarial drugs with structural examples.
6. Write a note on anti-viral drugs.
7. Outline the synthesis and uses of the following:
   a) Dapsone b) Mebendazole
8. Give the structure and uses of the following:
   a) Albendazole b) Sulphacetamide c) Dapsone
   d) Metronidazole e) Diethyl carbamazine citrate.
9. Write a note on anti-fungal antibiotics.
10. Write a note on solid phase synthesis.
11. Discuss any two physico-chemical parameters used in QSAR.
12. Explain various approaches used in drug design.

****

QP Code: 11455

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmacology-III

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Classify antiulcer agents with suitable examples. Explain the pharmacology of proton pump inhibitor. (4+6)
2. a) Classify fluroquinolones with suitable examples and explain the mechanism of action of norfloxacin. (2+3)
   b) Explain the general toxicity of anticancer agents.
3. a) Classify antifungal agents with suitable examples and explain the mechanism of action and uses of griseofulvin. (3+2)
   b) Explain the pharmacology of metronidazole.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write about antitussives.
5. Give the mechanism and uses of sulfonamides with classifying them.
6. Classify anti-tubercular agents. Write about isoniazid.
7. Explain the mechanism and uses of immunosuppressants.
8. Discuss the pathophysiology and treatment for UTI.
9. What are immunostimulant? Give their mechanism and uses with suitable examples.
10. Explain the general principle of acute, subacute and chronic toxicity studies.
11. Write about barbiturate poisoning in detail and discuss the antidotes for its treatment.
12. Discuss the signs and symptoms, treatment of lead poisoning.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Herbal Drug Technology

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Write the basic principles of Homeopathy. Write the method of preparation of Bhasma.
2. What type of nutraceuticals are useful for controlling cancer.
3. Write the different sources, chemical nature, uses and significance of herbs used for maintaining oral hygiene.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Give a brief note on processing of raw materials.
5. What are antioxidants and give some examples of natural antioxidants used for gastrointestinal disorders.
6. Define fixed oils. Write a note on fixed oils used in cosmetics.
7. What is meant by patenting traditional knowledge.
8. Write a note on patenting aspects of curcuma.
9. Write a note on ICH guidelines for the assessment of herbal drugs:
10. What is the present scope of herbal drug industries? Explain briefly
11. Write a note on storage area requirements as per schedule T.
12. Explain the good manufacturing practices to be followed in the manufacturing of Siddha and Unani medicines.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Biopharmaceutics and Pharmacokinetics

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Compare and contrast passive diffusion versus active transport. Add a note on facilitated transport.
2. Define absorption. Discuss the physic chemical factors influencing gastrointestinal absorption of drugs.
3. Discuss in detail one-compartment open model for a drug administered as IV infusion. Give the schematic representation, graphs, and equations for the same.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain the kinetics of protein binding.
5. Explain how bioavailability is measured using plasma data.
6. Give the monoexponential and biexponential equations for drugs administered as IV bolus and explain the terms.
7. Explain two compartment open model IV bolus administration.
8. Describe the concept of drug accumulation in multiple dosing.
9. Explain the kinetics of multiple dosing and steady-state levels of the multi-compartment model.
10. Write the Michaelis-Menten equation and explain the terminologies.
11. Define non-linear pharmacokinetics. Illustrate the causes of non-linearity with examples.
12. Explain the methods of estimation of Km and Vmax.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Quality Assurance

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. a) Discuss in detail about ISO 14000 certification process. (6+4)
   b) Explain in detail about the responsibilities of quality assurance and quality control departments.
2. a) Explain the factors to be considered while selecting the manufacturing site for the pharmaceutical industry. (5+5)
   b) How to prevent cross-contamination and bacterial contamination during production in pharmaceutical companies?
3. a) Explain the principle, procedure and limit for reducing substance test for rubber closures. (5+5)
   b) Explain the functional elements of non-clinical laboratory study protocol.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. List and explain the advantages and challenges of QbD implementation in the pharmaceutical sector
5. What training is required for a newly recruited fresh graduate as Research Associate in Pharmaceutical Formulation Research and Development department to start his job in his department? Suggest two major trainings as per cGMP guidelines.
6. Define the term GLP, write a note on disqualification of testing facilities
7. Explain in detail about the various phases involved in the quality audit process
8. Draw and explain a quality documentation pyramid.
9. Discuss about pharmaceutical distribution records.
10. What is instrument calibration? Explain the procedure for calibration of the pH meter.
11. What are the requirements to maintain a good warehouse in the pharmaceutical industry?
12. Enlist and explain the various characteristics that should be considered during analytical method validation.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Seventh Semester B. Pharm (SS1) Examination – June 2025

Subject: Instrumental Methods of Analysis

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the following: (5+5)
   a) Multiple standard plot method for the quantification of drugs by UV visible spectroscopy.
   b) Working of detectors used in the quantification of drugs in UV visible spectrophotometer.
2. Explain the problems of sample handling in IR spectroscopy. Explain the sample handling of solids and gases by IR spectroscopy. (3+5+2)
3. a) List the advantages of chromatography as a separation technique over other methods of separation. (4+6)
   b) List the applications of paper chromatography and thin layer chromatography.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain how the physicochemical factors affect the quenching of florescence.
5. Differentiate nephelometry and turbidometry.
6. Explain the factors affecting Rf value in thin layer chromatography.
7. Explain the reasons for derivatization in gas chromatography.
8. Explain the working of pumps used in HPLC.
9. Explain the different types of stationary phases in HPLC.
10. Classify the ion exchanges with examples.
11. Explain the methods to prepare gel in gel chromatography. List applications of gel chromatography.
12. Explain the principle and application of affinity chromatography.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Seventh Semester B. Pharm (SS1) Examination – June 2025

Subject: Novel Drug Delivery System

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Define the term controlled, sustained, extended and modified release. Explain the ideal characteristics of drugs candidate for controlled drug delivery.
2. Explain the types, advantages and disadvantages of implantable drug delivery system.
3. Explain different formulation approaches of transdermal drug delivery system.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Classify polymers. Explain in detail the biodegradable polymers.
5. Describe the formulation considerations of buccal delivery systems.
6. Write short notes on gastroretentive floating drug delivery system.
7. Describe the monoclonal antibodies with their applications.
8. Write advantages, disadvantages, and applications of nanoparticles.
9. Explain hand shaken and non-shaken method for liposome preparation.
10. Write the advantages and disadvantages of ocuserts.
11. Discuss briefly intra-vaginal drug delivery systems.
12. Write the advantages, disadvantages and applications of the intrauterine drug delivery system.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B Pharm (SS1) Examination – June 2025

Subject: Biostatistics and Research Methodology

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Calculate the mean for the following data on systolic BP volunteers:

Systolic BP (mm HG)	91-100	101-110	111 - 120	121-130	131-140	141-150
Frequency	08	14	20	26	24	18

2. Define probability. Explain the standard normal distribution and Poisson's distribution with examples.
3. Discuss the types of non-parametric tests and its applications.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write a note on Pearson's correlation coefficient.
5. Why is hypothesis testing important in data analysis?
6. What is the purpose of sampling and what might go wrong during the process?
7. List out the advantages and disadvantages of blocking and confounding concepts.
8. Give the significance of SPSS.
9. Write a note on Design of Experiments.
10. How is full factorial design performed?
11. Give the application of response surface methodology.
12. List out the basic elements of factorial designs.

****

QP Code: 11464

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B Pharm (SS1) Examination – June 2025

Subject: Social and Preventive Pharmacy

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. Explain different vitamin deficiency disorders and their prevention.
2. Write general principles of prevention and control of respiratory infections.
3. Write a note on the National Health Programme and National HIV and AIDS Control Programme.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write a note on food with relation to nutrition and health.
5. Explain drug addiction and drug substance abuse.
6. Write a note on control of deafness.
7. Discuss the role of WHO in Indian national programme.
8. Write briefly on National Health Intervention Programs for Mother and Child.
9. Write a note on National Malaria Prevention Programme.
10. Explain the steps of improvement in rural sanitation.
11. What are the community services in urban areas?
12. Write the functions of PHC in the health care system.

****

QP Code: 11465

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Marketing

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain how branding helps companies differentiate their products or services in a crowded marketplace. Discuss the importance of brand consistency and the long-term benefits it can bring to a company, including increased brand equity and customer trust.
2. What factors are strategically important when designing pharmaceutical marketing channels, and how can conflicts within these channels be managed effectively?
3. Explain the concept of the marketing environment and its significance in the business world.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain the determinants of a promotional mix in marketing and provide examples of promotional methods commonly used in the pharmaceutical industry.
5. Discuss the importance of public relations in the pharmaceutical industry and how it contributes to the promotion of pharmaceutical products, including Over the Counter (OTC) products.
6. Explain the importance of pricing in the pharmaceutical industry and its role in achieving business objectives.
7. Describe the idea of consumerism and how it influences marketing strategies, particularly in the pharmaceutical sector.
8. Discuss the unique characteristics and challenges associated with industrial marketing in the pharmaceutical industry.
9. Explain the importance of both quantitative and qualitative aspects in understanding the pharmaceutical market and discuss the key components of market size and composition.
10. Examine the factors that influence patients' choice of physicians and retail pharmacists in the pharmaceutical market.
11. Examine the key aspects of product management specific to the pharmaceutical industry and discuss the unique challenges and opportunities in this sector.
12. Elaborate on the significance of product branding, packaging, and labeling decisions in the pharmaceutical industry, and how these decisions can influence consumer choices and safety.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Define marketing in a concise manner.
14. What distinguishes marketing from selling?
15. Define the concept of the product life cycle briefly.
16. What are the key elements of product positioning in marketing?
17. Explain the method of personal selling in marketing.
18. Explain the concept of public relations in promotion.
19. Write the strategic importance of physical distribution management in the pharmaceutical industry?
20. Name two key tasks involved in physical distribution management for pharmaceutical products.
21. What are the key objectives of pricing in marketing?
22. Name two determinants that influence pharmaceutical pricing.

***

QP Code: 11466

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Regulatory Science

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. What is ANDA? Discuss the application and approval process of ANDA.
2. Comparatively discuss the similarity and differences of ACTD over ICH-CTD.
3. Write the contents and steps involved in the preparation of DMF.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Discuss the stages of drug discovery.
5. Discuss how changes to an approved NDA/ ANDA are reported.
6. What are the Good Clinical Practice obligations of investigators and sponsors?
7. Write a detailed note on Orange Book.
8. Write the importance of and procedure for informed consent.
9. What is the content of clinical trial protocol.
10. Write the organizational structure and application forms for regulatory authority for United States.
11. Procedure for export of pharmaceutical products in India.
12. Regulatory requirements for innovator and generics.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Purple book.
14. Timeline for drug development.
15. Title 21 of Code of Federal Regulation of US.
16. Regulatory authority for Australia and Japan.
17. Pharmacovigilance Program of India.
18. Approving authority for clinical trials in India.
19. Monitoring of clinical trials.
20. Importance of pre-clinical studies.
21. Importance of branded generics.
22. Draw CTD triangle.

***

QP Code: 11467

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmacovigilance

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the severity, predictability and preventability assessment of ADRs.
2. How can a pharmacovigilance programme be established in a hospital and industry? Discuss.
3. Explain the WHO drug dictionaries and coding in pharmacovigilance.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Describe the D&C Act and Schedule Y from a pharmacovigilance perspective.
5. Explain the importance of safety monitoring of medicine.
6. Explain the importance of international classification of diseases.
7. Explain the various information resources used in pharmacovigilance with suitable examples.
8. Elaborate on Pharmacovigilance Programme of India (PvPI).
9. Describe in detail the vaccine pharmacovigilance.
10. Explain cohort studies.
11. Explain active surveillance.
12. Explain the process of communication in drug safety crisis management.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Classify ADRs.
14. What is serious adverse drug reaction?
15. What is thalidomide tragedy?
16. What is VigiBase and VigiAccess?
17. What are the components of Eudravigilance?
18. What are international nonproprietary names (INN)?
19. What are adverse events following immunization?
20. What are spontaneous reports?
21. What is vaccination failure?
22. What are the objectives of causality assessment?

***

QP Code: 11468

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Quality Control and Standardizations of Herbals

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Enumerate the evaluation methods of crude drugs. Explain the quantitative physical methods with their significance.
2. Explain the factors affecting collection and processing of medicinal plants as per Good Agricultural and Collection Practices (GACP).
3. Explain the toxicological and biological method of evaluation of crude drugs.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write the salient features for GMP for herbal medicine.
5. Write a note on ICH guideline for quality control of herbal medicinal products.
6. Give a clinical trial protocol for safety evaluations.
7. What is the traditional system of medicine? What are the GLP requirements in traditional system of medicine.
8. What is the scope of EMA guidelines on quality control of herbal medicinal products?
9. Explain the identification and estimation of pesticide residues in plant products.
10. Write the chemical tests for identification of secondary plant metabolite.
11. Explain the drug regulatory requirement of India for natural products.
12. Give the applications of chromatography in standardization of herbal drugs.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. What is oxidation?
14. Define monographic analysis.
15. Enlist the components of HPLC.
16. List out toxicological evaluation tests.
17. Define qualification and validation as per GMP.
18. What provisions are given for herbal drugs in the Drugs and Cosmetic Act?
19. Application of gas chromatography in standardization of herbal products.
20. Define GACP, GLP, GMP and cGMP.
21. Define swelling index and give its significance.
22. Define: a) Standardization b) Shelf life.

***

QP Code: 11469

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Computer Aided Drug Design

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the stages of drug discovery and development.
2. Theoretical aspects of molecular modelling.
3. Tools and parameters in molecular docking.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Lead discovery based on drug metabolism.
5. Lead discovery based on clinical observation.
6. Serendipitous drug discovery.
7. 3D-QSAR approaches like COMSIA.
8. SAR versus QSAR.
9. *De Novo* drug design.
10. Biochemical and pharmaceutical databases.
11. Bioinformatics.
12. Molecular mechanics.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Bioisosterism.
14. Non-random screening.
15. QSAR applications.
16. 3D-QSAR.
17. Rigid docking.
18. Drug likeness screening.
19. Hammett equation.
20. Chemoinformatics.
21. Global conformational minima.
22. COMFA.

***

QP Code: 11470

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Cell and Molecular Biology

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Classify proteins based on structure with example and explain protein folding pathways.
2. Differentiate between transcription and translation.
3. Define receptor. Explain the molecular pathway of activation of GPCR.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain DNA change and repair mechanism.
5. JAK-STAT pathway.
6. Write in detail about the structure and function of Golgi apparatus.
7. Write a note on cell cycle checkpoints and the role of cyclins & cyclin dependent kinase.
8. Write the general structure of amino acids and classify amino acids with examples.
9. Explain the genomic analysis.
10. Explain the function of the centromere and cell wall.
11. Write the difference between prokaryotes and eukaryotes.
12. Application of cell and molecular biology.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Chargaff's rule.
14. Introns and Exons.
15. Name the essential amino acids.
16. Role of phosphatases and kinases.
17. Write uses of flow cytometer.
18. Human gene therapy.
19. Molecular complementarity and its importance.
20. Label chromosome and write its functions.
21. Enumerate the various intracellular signaling pathways.
22. What is signal transduction? Write its importance.

***

QP Code: 11471

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Cosmetic Science

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Discuss the role of humectants and emollients in cosmetics along with their applications.
2. Describe specification for tooth paste as per BIS.
3. Describe the chemistry and formulation of para-phenylenediamine (PPD) - based hair dye.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain cosmetic and cosmeceutical applications of clove.
5. With a neat, labeled diagram, explain corneometer.
6. Explain hair growth cycle.
7. Explain the principle involved in the formulation of moisturizing creams.
8. What are deodorants? Explain their mechanism.
9. What is TEWL? How it is measured.
10. What is hair tensile strength? How is it measured?
11. What is face wash? Write its ideal properties and functions.
12. Explain different types of prickly heat. Give reasons.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Differentiate soaps and syndets.
14. Write four cosmetic applications of turmeric.
15. Differentiate antiperspirants and deodorants.
16. Define the term comedogenic.
17. What is SPF sunscreen? Explain.
18. Enlist sun protection cosmetics.
19. Write the advantages and disadvantages of shampoos.
20. What are abrasives? Give examples.
21. Write are the effects of UV-B rays on skin?
22. Enlist the preservatives used in cosmetic preparation.

***

QP Code: 11472

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Experimental Pharmacology

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. List various mazes to assess memory in rodents. Explain the principle and procedure of a test developed by Morris using a maze. (3+7)
2. Describe any two methods in detail for preclinical screening for antiadrenergic drugs. (5+5)
3. Describe the distinctive features and applications of four commonly used laboratory animals.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Discuss the strategy to adopt for selecting a novel research topic.
5. Write the principle and procedure of one chemical and one electrical method to screen antiarrhythmic drugs.
6. With the design of an animal experiment, explain how to evaluate a drug's mydriatic and miotic effects.
7. Discuss the screening method to evaluate a general anaesthetic agent.
8. Describe the principle and procedure of chemically induced nociception in mice to evaluate the central analgesic activity of a test compound.
9. Discuss the steps involved in data analysis using ANOVA.
10. Discuss the principle, procedure and evaluation of the forced swim test using mice.
11. What is conditioned avoidance response and how it is useful to evaluate a pharmacological action of the drug?
12. List and write the applications of any five common transgenic animals.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Write the principle involved in alloxan induced diabetes in rats.
14. Justify the intra-plantar injection of carrageenan in rats.
15. How to assess the anti-parkinsonian effect of a drug in animals.
16. Name any four agents used to induce dementia in rats.
17. Write the rationale for recording the E/F ratio in the MES test using rats.
18. Which pharmacological action can be evaluated using metabolic cages for rats.
19. Write the significance of the glucose tolerance test.
20. What is the Null hypothesis and its significance?
21. Mention the types of graphical representations.
22. Write the principle of a cytotoxicity assay.

******

QP Code: 11473

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Advanced Instrumental Techniques

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the principle of 13C-NMR and write applications of the technique.
2. Write the principle, instrumentation and applications of differential thermal analysis.
3. Explain the advantages of hyphenated techniques. Elaborate on LC-MS/MS. (2+8)

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain the general rules of fragmentation in mass spectrometry.
5. Explain the principle of electron impact ionization in mass spectrometry.
6. What are thermal methods? Explain the thermogram obtained in differential scanning calorimetry.
7. Explain the calibration of UV-Visible spectrophotometer.
8. Elaborate on liquid-liquid extraction technique.
9. Explain the procedure to determine accuracy of analytical method as per ICH guidelines.
10. What is calibration? Explain the of calibration of electronic balance.
11. Elaborate on quadrupole mass analyzer in MS.
12. Explain X-ray powder diffraction technique.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Define chemical shift and list two factors which affect chemical shift.
14. Write two applications of mass spectrometry.
15. Differentiate between TGA and DSC in thermal methods.
16. List the components of H-NMR spectrometer.
17. Define linearity and robustness as per ICH guidelines.
18. Write a calibration of IR spectrometer.
19. Write any four applications of radioimmunoassay.
20. List the advantages and disadvantages of solid phase extraction.
21. Explain the role of TMS in NMR technique.
22. Name any four types of peaks in mass spectrum.

***

QP Code: 11474

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Dietary Supplements and Nutraceuticals

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Discuss any three regulatory aspects of food safety. Explain the Effect of various environmental factors on the potential of nutraceuticals. (6+4)
2. Classify nutraceuticals with examples. Explain the importance of nutrition in maternal and child health. (6+4)
3. Explain the biological effect of free radicals in inflammation and cancer. (5+5)

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Role of free radicals in diabetes mellitus.
5. “Phytochemicals as nutraceuticals” comment on the theme with any suitable example.
6. Health benefits of flavonoids.
7. Write a note on vitamins as antioxidants.
8. Significance of functional food.
9. Managing weight control with nutraceuticals.
10. Complex carbohydrates as functional food ingredients.
11. Impact of nutrition education in the community.
12. Pharmacopoeia specifications for nutraceuticals.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Drawbacks of synthetic antioxidants.
14. Examples of any four functional foods.
15. Probiotic as nutraceutical.
16. Sources of dietary fibres.
17. Marker compounds in broccoli and garlic.
18. Medicinal uses of flaxseed.
19. Significance of superoxide dismutase.
20. Expand MPO and FPO.
21. Adulteration of foods.
22. Medicinal benefits of tocopherols.

***

QP Code: 11475

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Eighth Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Product Development

Note: *Draw neat, labeled diagrams wherever necessary.*
Your answer should be specific to the questions asked.

Time: 3 hours **Max. Marks: 75**

I. LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Discuss various unit operations and quality control tests involved in the manufacture of tablets.
2. Explain the applications of suspending, emulsifying agents and cyclodextrins in the formulation development.
3. Write a note on pharmaceutical excipients used in the development of NDDS and Aerosol products.

II. SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write about full and fractional factorial designs and their applications.
5. Discuss about glass and plastic packaging materials used in pharmaceutical product development.
6. Write short notes on QbD in pharmaceutical product development.
7. Write about the pharmaceutical excipients used in the development of capsule dosage forms.
8. Discuss the applications of non-ionic surfactants in the formulations.
9. Discuss the quality control testing of gastro-retentive dosage forms.
10. Write a note on the types of packaging of the pharmaceutical products.
11. What are directly compressible vehicles? Write their applications.
12. Discuss various enteric coating materials.

III. SHORT ANSWERS (Answer ALL questions) **10x2=20 Marks**

13. Enlist the excipients used in formulation of niosomes.
14. What are the various quality control tests for parenteral products?
15. Write about dependent and independent variables in the optimization.
16. Write about the solubilizers used in the monophasic liquid dosage forms.
17. Write a note on the uses of polyethylene glycols in formulation development.
18. Enlist the excipients used in semisolid product development.
19. What are the various types of packing materials used in the development of pharmaceutical dosage forms?
20. Write a note on the excipients used in liquid oral formulations.
21. What is long-term and accelerated stability testing of pharmaceutical products?
22. Write a note on the film coating of tablets.

******

QP Code: 11431

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

First Semester B Pharm (SS1) Examination – June 2025

Subject: Human Anatomy and Physiology- I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10= 20 Marks**

1. Draw a neat, labelled diagram of cell and illustrate the components of cell. (2+8)
2. Discuss the anatomy of skeletal muscle and explain in detail the mechanism of muscle contraction. (3+7)
3. Define clotting. Enlist the clotting factors and explain the blood coagulation cascade. (1+2+7)

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Explain the process of cell division.
5. Explain the structure and functions of skin.
6. Explain the anatomy and physiology of spleen.
7. Illustrate the difference between sympathetic and parasympathetic nervous system.
8. Discuss various types of taste buds as gustatory organ.
9. Write a note on the internal structure of ear.
10. Explain the conduction system of heart.
11. Explain about systemic and pulmonary blood circulation.
12. Draw a neat, labelled diagram of ECG and explain the significance of different waveforms.

****

QP Code: 11432

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

First Semester B. Pharm (SS1) - Examination – June 2025

Subject: Pharmaceutical Analysis-I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10=20 Marks**

1. What are the different methods to express concentration of a solution? How will you prepare 500ml of 0.1N sodium hydroxide and standardization of the same using oxalic acid as primary standard?
2. Discuss in detail the neutralization curves for acid-base titration and indicate the choice of indicator in each case.
3. What are complexometric titrations? Explain different types of complexometric titrations. Add a note on metal ion indicator

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Explain the different types of errors citing appropriate examples in pharmaceutical analysis.
5. Explain the theories of indicator.
6. Write the principle and steps involved in the gravimetric analysis.
7. Define and explain oxidation and reduction with suitable example.
8. Define cerimetry. How will you prepare and standardize 1000ml of 0.1N ceric ammonium sulphate.
9. Discuss the principle involved in iodometry and iodimetry.
10. Describe the typical methods to determine the end point of potentiometric titrations.
11. Explain the principle involved in the conductometric titration of a strong acid with strong base.
12. With the help of a neat, labeled diagram, explain the current–voltage curve in polarography.

****

QP Code: 11433

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

First Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutics

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2x10= 20 Marks**

1. Define prescription. Explain the importance of various parts of prescription.
2. Explain different techniques for the solubility enhancement of liquid dosage forms.
3. Define and classify emulsions. How will you overcome stability problems of emulsions? Discuss.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. How will you calculate pediatric dose on the basis of age, body weight and body surface area?
5. Write short notes on dusting powders and hygroscopic powders.
6. Differentiate flocculated and deflocculated suspension.
7. Write a note on displacement value for suppositories.
8. Define incompatibilities. Explain types of chemical incompatibilities.
9. Explain different types of suppository bases.
10. Explain different factors influencing dermal penetration of drugs.
11. Enlist different excipients used in the preparation of semisolid dosage forms.
12. Explain different methods for the preparation of creams.

******

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

First Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Inorganic Chemistry

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any two questions) **2 x 10= 20 Marks**

1. a) Write the principle and procedure involved in limit test for iron. (2+3)
   b) Write the principle involved in limit test for chlorides and arsenic. (2+3)
2. a) Describe the role of physiological buffers in the maintenance of acid base balance in the body. (6+4)
   b) Discuss about electrolyte replacement therapy.
3. Write the preparation, properties, assay and uses of hydrogen peroxide and sodium bicarbonate. (5+5)

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Enumerate the source of impurities.
5. Define and classify dental products. Explain about zinc eugenol cement.
6. Classify cathartics and explain properties and preparations methods of any one compound.
7. Classify antidotes and write about properties, preparations and applications of sodium thiosulphate.
8. Write about properties, preparations and applications of ferrous sulphate and ammonium chloride.
9. Define emetics. Write the preparation, properties and uses of copper sulfate.
10. List out pharmaceutical applications of radioactive substances.
11. Discuss about construction, working principle and applications of Geiger-Müller (GM) counter with neat diagram.
12. Write the properties of α, β and γ radiations.

****

QP Code:11435

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2025

Subject: Human Anatomy and Physiology-II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2 x 10= 20 Marks**

1. Draw a labeled diagram of brain and enumerate functions of each part. (5+5)
2. Discuss the anatomy and functions of pancreas with associated disorders. (7+3)
3. Explain the mechanism of respiration and write a note on respiratory volumes. (6+4)

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write a short note on synaptic signaling.
5. Write a note on gastric acid secretion.
6. Explain the process of urine formation.
7. Write a brief note on anterior pituitary gland hormones.
8. Write a note on hyperthyroidism.
9. Describe in detail the hormones secreted from pancreas and their actions.
10. Explain the role of estrogen and progesterone in female reproductive system.
11. Write a note on the structure of sperm and process of spermatogenesis.
12. Write a note on chromosomes and genes.

****

QP Code:11436

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Organic Chemistry- I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2 x 10= 20 Marks**

1. a) What rules are followed in writing the IUPAC name of alkanes, alkenes and alkynes? (5+5)
   b) Explain the structural isomerism with examples.
2. a) Explain E1 and E2 reactions with mechanism and kinetics. (7+3)
   b) Explain Saytzeff's rule with an example.
3. a) Explain mechanism, kinetics and stereochemistry of the SN_2 reaction. (7+3)
   b) What are the factors affecting SN_2 reaction?

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Write the IUPAC name of the following compounds.
   a) CH_3-C≡C-C≡C-CH_2-C≡CH
   b) CH_3-CH_2-CH_2-CO-CH_2-CHO
   c) CH_3-CH_2-CH_2-CH(OH)-COOH
   d) CH_3-CH_2-CH_2-O-CH_2-CH_3
   e) CH_3-CH_2-CH=CH-COOH
5. State Markownikoff's rule and explain electrophilic addition for Markownikoff's rule.
6. Write the structure, uses and qualitative tests for Ethyl alcohol and methyl alcohol.
7. Explain Cannizaro and Crossed Cannizaro's reaction with examples.
8. Explain Aldol and Perkin condensation.
9. Give the qualitative tests and uses of hexamine and benzaldehyde.
10. Explain the acidity of carboxylic acids and the effects of substituents on the acidity of carboxylic acids.
11. Write the structure and uses of acetic acid, lactic acid, tartaric acid, oxalic acid, and benzoic acid.
12. What are the qualitative tests for amides and esters?

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2025

Subject: Biochemistry

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2 x 10= 20 Marks**

1. Explain the classification and biological functions of lipids.
2. Explain in detail the electron transport chain (ETC) and its mechanism.
3. Explain in detail the formation and utilization of ketone bodies with significance.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. What is energy rich compounds? Suggest suitable examples.
5. Explain in brief substrate level phosphorylation with suitable examples.
6. Discuss in brief disorder associated with amino acid metabolism.
7. What are the salient features of DNA structure?
8. Explain the RNA synthesis.
9. Describe protein synthesis in brief.
10. Write a note on purine and pyrimidine nucleotides.
11. Differentiate between competitive and non-competitive enzyme inhibition in detail.
12. What are isoenzymes? Suggest suitable examples.

****

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2025

Subject: Pathophysiology

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any two questions) **2 x 10= 20 Marks**

1. Write in detail the vascular events involved in the process of inflammation.
2. Describe the etiology, pathogenesis and diagnosis of asthma. (3+5+2)
3. Explain the pathogenesis of peptic ulcer disease.

Section C

SHORT ESSAY (Answer any seven questions) **7x5= 35 Marks**

4. Explain the process of repair mechanisms.
5. Explain the pathogenesis of stroke.
6. Define congestive cardiac failure. Explain the pathogenesis of congestive cardiac failure.
7. Explain the pathogenesis of cancer.
8. Explain the pathogenesis of inflammatory bowel disease.
9. Briefly discuss about osteoporosis.
10. Write the clinical symptoms, explain the pathogenesis of AIDS.
11. Explain the etiology, pathogenesis, signs and symptoms of tuberculosis.
12. Explain the etiology, pathogenesis, signs and symptoms of urinary tract infections.

****

QP Code:11439

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Organic Chemistry-II

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the effect of substituents on the reactivity and orientation in benzene.
2. Explain briefly about acidity of phenols and effect of substituents on acidity of phenols. (5+5)
3. What are oils? Give examples for saturated and unsaturated fatty acids. Write down the principle and significance of acid value, saponification value and iodine value. (2+2+6)

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Write down the structure and uses of DDT, Saccharin, BHC and Chloramine.
5. What is the synthetic utility of aryl diazonium salt?
6. Write a note on rancidity and drying of oils.
7. Define and classify polynuclear aromatic hydrocarbons with examples. Write down the Haworth synthesis of phenanthrene.
8. Mention the synthesis and reactions of diphenyl methane.
9. Write down the synthesis and reactions of naphthalene.
10. Write a note on Baeyer's strain theory and its limitations.
11. Write any two preparation and reactions of cyclobutane.
12. Write a note on Coulson and Moffitt's modification.

****

QP Code:11440

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2025

Subject: Physical Pharmaceutics - I

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Define solubility. Explain the factors influencing solubility of drugs and write about the distribution law, its limitation and applications? (2+5+3)
2. Explain the following with suitable examples and applications. (5+5)
   a) Relative humidity
   b) Polymorphism.
3. Define surface tension. What are the various methods to determine the surface tension and interfacial tension? Explain any three methods in detail.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Explain the factors affecting solubility of gas in liquids.
5. Define aerosol. Explain the containers used in aerosol formulations.
6. Describe in detail about the hydrophilic lipophilic balance (HLB) scale.
7. Explain organic molecular complexes with example.
8. Explain the complexation and drug action.
9. Describe any one method for studying of drug protein binding.
10. Define pH. Explain Sorensen's pH scale.
11. Write in detail about buffer equation and buffer capacity.
12. Write a note on isotonic solutions.

****

QP Code:11441

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Microbiology

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions	**(Valued Separately)**	20 Marks
Section B: Long Essay		20 Marks
Section C: Short Essay		35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Classify bacteria on the basis of nutritional requirements and add a note on raw materials used for preparation of culture media. (4+6)
2. Explain the principle, procedure, applications and demerits of sterilization using hot air oven. (3+3+2+2)
3. Describe the steps involved in sterility testing; add a note on its interpretation. (6+4)

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Describe bacterial growth curve.
5. Write principle and procedure of Gram's staining technique.
6. Explain the factors influencing disinfection.
7. Write principle and method of microbiological assay of vitamin B_{12}.
8. Describe main sources of contamination of an aseptic area and explain about prevention of contamination.
9. Write in detail about steps involved in evaluation of new antibiotic.
10. Explain different sources and types of microbial contamination of pharmaceutical products.
11. Explain different factors affecting microbial spoilage of pharmaceutical products.
12. Write any five applications of animal cell culture technology.

****

QP Code:11442

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2025

Subject: Pharmaceutical Engineering

Time: 3 hours **Max. Marks: 75**

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions **(Valued Separately)** 20 Marks
Section B: Long Essay 20 Marks
Section C: Short Essay 35 Marks

Section B

LONG ESSAY (Answer any TWO questions) **2x10=20 Marks**

1. Explain the theories involved in the energy for comminution.
2. Explain about the construction, working, advantages and disadvantages of forced circulation evaporator with a neat, labelled diagram.
3. Write in detail note on ribbon blender.

Section C

SHORT ESSAY (Answer any SEVEN questions) **7x5= 35 Marks**

4. Enlist the size separation methods and explain any two of them.
5. Classify distillation techniques and mention their applications.
6. Demonstrate on working of lyophilizer.
7. Explain Poiseuille and Dracy equations and its significance in filtration.
8. Discuss on principle and explain the construction and working of cartridge filter.
9. Write about merits and demerits of perforated and non-perforated basket centrifuge.
10. Enlist the inhibitors, coatings and lining and their role in the prevention and control of corrosion.
11. Explain about stress induced corrosion.
12. Justify the role of stainless steel as material for construction.

****