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ACADEMY
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M Y S U R U

**JSS AHER University Exam Previous
Question Papers**

**June 2026
(B Pharm)**

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JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Enzyme immobilization refers to:
 - a) Enzyme precipitation
 - b) Enzyme purification
 - c) Fixing enzymes on a solid support
 - d) Enzyme synthesis
2. Which of the following is a common application of biosensors in the pharmaceutical industry?
 - a) Measuring enzyme concentration
 - b) Monitoring temperature changes
 - c) Determining the pH of water
 - d) Quality control during drug manufacturing
3. Which of the following enzymes is involved in the breakdown of proteins into peptides and amino acids in pharmaceutical applications?
 - a) Catalase
 - b) Amylase
 - c) Lipase
 - d) Protease
4. Protein engineering is achieved primarily by:
 - a) Chemical synthesis
 - b) Heat treatment
 - c) Genetic modification of DNA encoding protein
 - d) Enzyme immobilization

5. Which of the following is used to join DNA fragments at specific sequences?
 - a) DNA ligase
 - b) DNA polymerase
 - c) Restriction endonuclease
 - d) RNA polymerase
6. Which of the following temperature aids in extension steps in PCR?
 - a) 45 °C
 - b) 55 °C
 - c) 72 °C
 - d) 98 °C
7. Which of the following is the major advantage of recombinant pharmaceutical products?
 - a) Costlier
 - b) Less pure
 - c) Toxic
 - d) Highly specific
8. Which of the following products is obtained by conventional microbial fermentation rather than recombinant DNA technology?
 - a) Recombinant insulin
 - b) Hepatitis-B vaccine
 - c) Interferon
 - d) Penicillin
9. Which type of immunity do immunoglobulin preparations provide?
 - a) Active immunity
 - b) Passive immunity
 - c) Autoimmunity
 - d) Immune suppression
10. What is the main purpose of plasma substitutes?
 - a) Immunization
 - b) Blood grouping
 - c) Antibiotic delivery
 - d) Volume replacement
11. Hybridoma cells are formed by fusion of:
 - a) Two plasma cells
 - b) B-cells and myeloma cells
 - c) T-cells and macrophages
 - d) Stem cells

12. The rejection of transplanted organs is primarily mediated by:
- a) B cells
 - b) Macrophages
 - c) T cells
 - d) Natural killer cells
13. ELISA is mainly used for the detection of:
- a) DNA
 - b) RNA
 - c) Antigens or antibodies
 - d) Lipids
14. The genetic material in eukaryotes is present as:
- a) Linear DNA inside nucleus
 - b) Circular DNA without nuclear membrane
 - c) Supercoiled DNA
 - d) Naked circular DNA in nucleoid region
15. In conjugation, genetic material is transferred between bacteria through :
- a) Pili
 - b) Flagella
 - c) Cilia
 - d) Plasmids
16. A mutation that results in no change in amino acid is known as:
- a) Silent mutation
 - b) Missense mutation
 - c) Nonsense mutation
 - d) Frameshift mutation
17. Which is the common fermentation medium component?
- a) Carbon source
 - b) Solvent
 - c) Preservative
 - d) Ethanol
18. Fermentation media mainly provides:
- a) Oxygen only
 - b) Water only
 - c) Antibiotics
 - d) Nutrients for microbial growth

19. Which microorganism is primarily used to produce citric acid?
- Clostridium acetobutylicum*
 - Streptomyces griseus*
 - Aspergillus niger*
 - Bacillus subtilis*
20. What is the maximum storage time for whole human blood at 4°C?
- 7 days
 - 14 days
 - 35 days
 - 42 days

Section B

ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the working of biosensors and their applications in the pharmaceutical industry.
2. Discuss the application of recombinant DNA technology and genetic engineering in the production of hormone insulin.
3. Explain in detail the process of hybridoma technology. How are monoclonal antibodies produced, and what are the steps involved in their purification?

Section C

SHORT NOTES (Answer any SEVEN questions)

7x5= 35 Marks

4. Write a note on the importance of biotechnology with reference to pharmaceutical sciences.
5. Briefly describe protein engineering and its applications in pharmaceutical field.
6. Explain the applications of genetic engineering in medicine.
7. Explain the principle, and steps of polymerase chain reaction (PCR).
8. Write briefly about cell-mediated immunity.
9. Write a short note on blood products and plasma substitutes.
10. Write a short note on genetic organization of prokaryotes.
11. Write a note on microbial biotransformation and their applications.
12. Explain the collection and storage of whole human blood.

JSS Academy of Higher Education & Research, Mysuru

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which of the following disease has been eradicated:
 - a) Malaria
 - b) Tuberculosis
 - c) Smallpox
 - d) Dengue
2. Which drug is an example of stimulant?
 - a) Lorazepam
 - b) Amphetamine
 - c) Oxazepam
 - d) Phencyclidine
3. The inadequate absorption or availability of proteins and energy is known as:
 - a) Protein-energy malnutrition
 - b) Pepsin-enzyme malnutrition
 - c) Pepsin-energy malnutrition
 - d) Protein-excess malnutrition
4. Which of the following conditions is directly related to chronic overnutrition?
 - a) Marasmus
 - b) Obesity
 - c) Kwashiorkor
 - d) Anaemia

5. Gestational diabetes is diagnosed by:
 - a) Glucose Tolerance Test (GTT)
 - b) Fasting and postprandial blood sugar
 - c) Random blood sugar
 - d) 24 hours glucose profile
6. Filarial larvae can be collected from man's.....:
 - a) Peripheral blood at midnight
 - b) Smears of spleen
 - c) Smears of intestinal contents
 - d) Biopsy of liver
7. Vibrio cholera is a motile bacterium, which belong to the group of:
 - a) Lophotrichous
 - b) Monotrichous
 - c) Peritrichomous
 - d) Amphitrichous
8. Incubation period of Ebola virus is:
 - a) Within an hour
 - b) Within 48 hours
 - c) 2 to 21 days
 - d) 2 to 7 days
9. World health organization recommended a control strategy for TB known as:
 - a) DOTS
 - b) Morphine
 - c) Gene therapy
 - d) MCT
10. Full form of NLEP:
 - a) National Leprosy Eradication Process
 - b) National Leprosy Enrolment Programme
 - c) National Leprosy Eradication Programme
 - d) National leprosy Evaluation Programme
11. Which vaccine in the universal Immunization program is administered to prevent tuberculosis?
 - a) DPT
 - b) BCG
 - c) OPV
 - d) Measles

12. In which year the manpower development scheme (Scheme A & B) became part of National Mental Health Programme (NMHP):
- a) 2010
 - b) 2009
 - c) 2015
 - d) 2013
13. Which of the following is the activity of the Family Welfare Programme?
- a) Malnutrition Programme
 - b) Child marriage
 - c) IUD Programme
 - d) One child one nation policy
14. Pellagra is primarily caused by a deficiency of which vitamin?
- a) Vitamin B₁ (Thiamine)
 - b) Vitamin B₃ (Niacin)
 - c) Vitamin B₆ (Pyridoxine)
 - d) Vitamin B₁₂ (Cobalamin)
15. The elderly population (>60 years) accounted for what percentage of total population of India in 2011:
- a) 6.2%
 - b) 7.4%
 - c) 8.3%
 - d) 9.3%
16. How many people are at risk of malaria in the world?
- a) 1.2 million people
 - b) 1.2 billion people
 - c) 3.2 million people
 - d) 3.2 billion people
17. Sanitization broadly means.....:
- a) Supporting small-scale entrepreneurs
 - b) Disposal of human excreta
 - c) To develop household water treatment (HWT) and social waste management system
 - d) Education people and community
18. Which component is considered the "hidden curriculum" that supports a health promoting school?
- a) School social environment
 - b) Formal health curriculum
 - c) Physical examination
 - d) Vaccination drive

19. Required number of populations to establish PHC in plain area:
- a) 15000
 - b) 20000
 - c) 25000
 - d) 30000
20. What was the goal to achieve at Alma Atta conference?
- a) Basic facility for all
 - b) Health for all
 - c) Sanitization for all
 - d) Vaccination for all

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- 1. Explain malnutrition in detail and its prevention.
- 2. Write general principles, prevention and control of cholera.
- 3. Explain Integrated Disease Surveillance Programme (IDSP)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- 4. Write about the evaluation of public health.
- 5. What is SARS? Write its symptoms and prevention.
- 6. Write about National Leprosy Control Programme.
- 7. Explain national health intervention program for mother and child.
- 8. Objectives and implementation of National Tobacco Control Programme.
- 9. Role of WHO in Indian national programme.
- 10. What are the functions of PHC?
- 11. Measures to improve rural sanitation.
- 12. What are the community services in urban areas?

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. What are the advantages of branding for businesses, and how do they impact a company's market position and customer loyalty? Provide specific examples of well-known brands that have successfully leveraged their brand image to achieve a competitive edge.
2. Provide a detailed analysis of the different factors that comprise the marketing environment and discuss how they can impact a company's marketing strategies.
3. Explain the primary duties of a Professional Sales Representative in the pharmaceutical industry and outline the steps involved in selecting, training, and supervising PSRs.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Discuss the factors that influence the allocation of a promotional budget in pharmaceutical marketing.
5. Explain the key promotional methods used in pharmaceutical marketing, such as direct mail, sampling, and medical exhibitions, and highlight when and why these methods are particularly effective.
6. Discuss the key determinants of price for pharmaceutical products and the pricing methods and strategies commonly employed in the industry.
7. Explain the concept of global marketing and how pharmaceutical companies adapt their strategies to international markets.
8. What is NPPA (National Pharmaceutical Pricing Authority), and how does it regulate pharmaceutical pricing in India?
9. Describe the demographic and socio-psychological characteristics of pharmaceutical consumers, and highlight the significance of market segmentation and targeting in this industry.
10. What are the key quantitative and qualitative considerations when evaluating the pharmaceutical market, and how does this analysis contribute to effective marketing strategies?
11. What factors should be considered when making new product decisions in the pharmaceutical sector, and how do they impact the overall product portfolio?
12. Discuss the importance of product positioning in the pharmaceutical industry and its role in influencing consumer perceptions.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. What are the key components of the marketing environment?
14. What is the significance of industry and competitive analysis in marketing?
15. Explain the term "product portfolio analysis" in a few words.
16. What is the significance of product branding in the pharmaceutical industry?
17. What is the purpose of a promotional budget?
18. Give an example of an online promotional technique for Over-the-Counter (OTC) products.
19. Define channel members in the context of pharmaceutical marketing channels.
20. Provide a brief overview of the duties of a Professional Sales Representative (PSR).
21. Define consumerism and its impact on marketing strategies.
22. Differentiate global marketing from domestic marketing?

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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 NDA? Discuss the application and approval process of NDA.
2. Present the difference between Paper CTD and eCTD. Write all the modules of ICH CTD.
3. What is clinical trial protocol? Discuss the contents and process of developing clinical trial protocol.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Present the stages of new drug development with timeline.
5. Write the organizational structure and different types of applications for European Union.
6. Contents for Drug Master File.
7. What is the importance of Title 21 of Code of Federal Regulation?
8. Constitution of Institutional Review Board.
9. Elaborate in different phases of clinical trials in humans.
10. Write a note on Pharmacovigilance Program of India.
11. Generic product development and approval.
12. What are the Good Clinical Practice obligations of sponsors and mentors?

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. ASEAN Common Technical Document.
14. Purpose of Abbreviated New Drug Application.
15. Non-clinical activities.
16. Regulatory authority for Canada and Japan.
17. Independent Ethics Committee.
18. Categories of change reporting to approved NDA.
19. Branded generics.
20. Investigational New Drug application.
21. Steps in export of pharmaceuticals from India.
22. Orange Book.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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 origin and evolution of Pharmacovigilance Programme of India (PvPI).
2. Explain the points to be considered while establishing pharmacovigilance program in hospital.
3. Explain the differences in Indian and global pharmacovigilance requirements.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Describe various pharmacovigilance resources with examples.
5. Explain the classification of ADRs.
6. How to assess the severity and seriousness of ADRs?
7. Write a short note on WHO drug dictionary.
8. What are the requirements of establishing a pharmacovigilance system in a hospital?
9. Describe the procedure involved in reporting adverse events following immunization.
10. How to communicate during drug safety crisis management?
11. Explain the organizational structure and objectives of ICH.
12. Write the importance of drug safety evaluation in geriatrics.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. What is the aim of WHO International Drug Monitoring Programme?
14. Name any four methods for causality assessment of ADRs.
15. What are international non-proprietary names for drugs?
16. What is FAERS and who is managing it?
17. Define spontaneous reporting.
18. What is targeted clinical investigation?
19. Define expedited reporting.
20. Write the full forms of ICSR and PSUR.
21. Name any four drugs which can cause nephrotoxicity.
22. What is the requirement under Schedule Y in India?

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Discuss in detail WHO guidelines for quality control of herbal drugs.
2. Describe chromatography techniques in the standardization of herbal drugs.
3. Explain the infra structural requirements under GMP for herbal industry.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain the procedure and significance on microscopical evaluation of herbal drugs.
5. Give clinical guidelines on assessment of safety and efficacy of herbal medicine.
6. Explain the protocol for stability testing of herbal medicines.
7. Research guidelines for evaluation of herbal medicines.
8. Explain Good Agricultural Practice in traditional system of medicine.
9. Challenges in monitoring adverse drug reactions in herbal medicines
10. Comparative study of African Herbal Pharmacopoeia and British Herbal Pharmacopoeia.
11. Explain the role of chemical and biological markers in standardization of herbal products.
12. Documents required for New Drug Application (NDA).

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Good Collection Practice.
14. Extractive values and its significance.
15. Define a) Pharmacovigilance and b) New Drug Application.
16. Shelf life and its significance.
17. Authentication of medicinal plants.
18. Primary processing of medicinal plants.
19. Identification test for genotoxic constituents.
20. Good Laboratory Practices.
21. Any two harvesting methods of medicinal plants.
22. What is GMP? In which section of the Drugs & Cosmetics Act, the GMP requirements for Ayurvedic, Siddha and Unani drugs are given?

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Illustrate analog based drug design.
2. Discuss informatics and methods in drug design.
3. Experimental and theoretical approaches for the determination of physicochemical parameters.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Global conformational minima determination.
5. ADME databases.
6. Drug likeness screening.
7. Chemoinformatics.
8. Hammett substituent constant and Taft's steric constant.
9. Hansch analysis and Free Wilson analysis.
10. Pharmacophore-based Screening.
11. Rational approaches to lead discovery based on traditional medicine.
12. Random screening and non-random screening.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. lead discovery.
14. Serendipitous drug discovery.
15. Define virtual screening.
16. Partition coefficient.
17. Define quantum mechanics.
18. Manual docking.
19. ADME databases.
20. Biochemical database.
21. COMSIA.
22. Global conformational minima.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Define DNA and RNA. Explain about molecular information of genomes. Briefly describe about DNA functioning.
2. Define mitosis and meiosis. Explain the phases involved in meiosis.
3. What are cell signals? Explain about the receptors of cell signals and explain about tyrosine kinase pathways.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. What are prokaryotic and eukaryotic cells, give the differences between them.
5. Define amino acids. Give the structure of protein and explain protein folding pathways
6. Outline the types of RNA and their functions.
7. Briefly explain about protein regulation by positive control mechanism.
8. Describe about chromosomal theory of inheritance.
9. Explain in detail about the regulation of protein kinases activity.
10. Explain about the impact of Mis-synthesis of signalling pathway.
11. Explain the check points of cell cycle.
12. Explain the cell cycle analysis with example.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Define genetic code.
14. What is protoplasm theory?
15. Explain osmosis and diffusion.
16. Define transamination and deamination.
17. What is lac operon?
18. What are mutations?
19. What are tertiary proteins give examples.
20. What do you mean by asexual method of cellular reproduction?
21. What do you mean by intracellular protein traffic?
22. What is genotype and phenotype in genetics?

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Describe the principle building blocks in the formulation of hair care products.
2. Define herb. Discuss the role of herbs as cosmetic and cosmeceutical excipients.
3. List out various excipients used in cosmetics and cosmeceuticals. Describe briefly rheology modifiers.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Define SPF. Write any one method to measure SPF.
5. With neat-labeled diagram, explain Sebumeter.
6. What are different types of hair fall? Give reasons.
7. What are skin blemishes? How it is treated.
8. Discuss cosmetics as quasi drugs.
9. What are vanishing creams? Write its advantages and disadvantages.
10. What is dry skin? What are the causes for dry skin?
11. Write a note on hair oils.
12. Discuss the formulation of antiperspirant roll-on preparations.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Give four reasons for dandruff.
14. Define anagen and catagen.
15. Write any one formula for deospray.
16. What is skin hydration? How it is measured.
17. Enlist various ingredients used in soap bars.
18. What are mouthwashes?
19. Write four cosmetic applications of Neem.
20. What is acne?
21. Define preservatives. Give two examples used in cosmetics.
22. Give four examples of emollients used in cosmetics.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Explain the requirements for maintenance and breeding of laboratory animals as per CCSEA guidelines. (5+5)
2. Explain any two *in-vivo* screening models to evaluate anti-epileptic activity of drugs. (5+5)
3. List out the *in-vivo* preclinical models to screen anti-ulcer drugs. Explain pylorus ligation model. (4+6)

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain the common routes of drug administration in laboratory animals.
5. Discuss the criteria for dose selection and calculation in experimental pharmacology.
6. Explain the catalepsy model in rodents to screen anti-psychotic agents.
7. Discuss an *in vivo* model to screen diuretic activity of drugs.
8. Explain Rota-rod test to evaluate skeletal muscle relaxant activity of drugs.
9. List out the *in-vivo* models for screening anti-diabetic activity of drugs. Discuss a chemical model in detail.
10. Explain any one model to screen anti-hypertensive activity of drugs.
11. Discuss Student's T test.
12. Elaborate the various sources of review of literature in research.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Expand and mention the goal of OECD.
14. Write the biological name of rat and guinea pig.
15. Give the importance of positive control in experimental pharmacology.
16. Enlist screening models for analgesic activity.
17. Enlist four models to screen parasympathomimetic agents.
18. Enumerate any two models to screen anti-coagulant agents.
19. What is MTT assay?
20. List any two models to screen anti-parkinsonian agents.
21. Mention the criteria for selecting a research topic.
22. What are the advantages of graphical representation of data.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Differentiate between H-NMR and ^{13}C -NMR. Write applications of H-NMR technique. (5+5)
2. What are thermal methods? Write the principle, instrumentation, and applications of thermogravimetry. (2+8)
3. Write advantages of hyphenated techniques? Elaborate on GC-MS/MS. (3+7)

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain rotating crystal technique in X-ray methods.
5. Explain the principle of FAB in mass spectrometry.
6. List the various methods of RIA and write the limitations and applications of the technique.
7. Explain the principle of MALDI in MS.
8. Explain the general principle and procedure of liquid-liquid extraction technique.
9. Explain the difficulties involved in combining HPLC with MS and methods to overcome them.
10. Elaborate on quadrupole mass analyzer in MS.
11. Explain the calibration of HPLC.
12. With the help of a neat schematic diagram explain the instrumentation of H-NMR technique.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Write any two advantages of ^{13}C -NMR.
14. With the help of suitable example explain the origin of isotopic peaks in mass spectrum
15. List components of Differential Thermal Analysis instrument.
16. List any four applications of X-Ray methods.
17. Explain calibration of fluorimeter.
18. List any four parameters of analytical method validation as per ICH guidelines.
19. List four advantages of ^{125}I used as marker in radioimmuno assays.
20. Name extraction methods for a drug from plasma.
21. List relaxation techniques in H-NMR.
22. Define the terms: Calibration and Validation.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. Explain in detail regulatory considerations in packaging of the pharmaceuticals.
2. Describe the applications of cyclodextrins as excipients. Add a note on semi-solid excipients.
3. Describe optimization by factorial designs and their applications in formulation development.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Suspending agents.
5. Semisolid preparations.
6. Solubilizers in pharmaceutical formulations.
7. Applications of nonionic surfactants.
8. Excipients for aerosol products.
9. Factors affecting the selection of packaging materials.
10. Film coating.
11. Parenteral formulation sealing methods.
12. Emulsifying agents.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Polyethylene glycol.
14. Enteric coating.
15. Effervescent granules.
16. Solubilizers used in pharmaceutical formulation.
17. Nonionic surfactants.
18. Materials employed for tablet coating.
19. Directly compressible vehicles.
20. Sorbitols.
21. Applications of Quality by Design (QbD).
22. Tablet excipients.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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. What are functional foods? Write the sources, marker compounds, medicinal uses and health benefits of spirulina.
2. Classify flavonoids with examples and write about their occurrence, chemical nature and medicinal benefits. (4+2+2+2)
3. Describe the role of free radical in initiation and progression of inflammation and kidney damage.

II. SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Give the source, active compounds and their health benefits of garlic.
5. Write the occurrence and medicinal benefits of quercetin and lacto bacillus.
6. Explain briefly about vegetables and beverages as functional foods.
7. Describe the damaging reactions of free radicals on proteins.
8. Explain the role of complex carbohydrates as functional foods with examples.
9. Enlist various endogenous and exogenous antioxidants. Write the biological role of superoxide dismutase.
10. What is FDA? Explain its role on the safety of foods.
11. Explain the processing and storage conditions of nutraceuticals with examples.
12. Define adulteration. Explain the types and causes of food adulteration.

III. SHORT ANSWERS (Answer ALL questions)

10x2=20 Marks

13. Health benefits of soyabean.
14. Define health and public health.
15. List out the uses of oats as functional food.
16. Write health benefits of α and β -Carotene.
17. What are dietary fibres? Give an example.
18. List out the benefits of tea.
19. Mention uses of α lipoic acid.
20. Write the biological actions of catalase
21. HACCP and its significance as food safety.
22. What are the purposes of FSSAI.

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Eighth Semester B. Pharm (SS1) Examination – June 2026

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	20 Marks
Section B: Long Essay	20 Marks
Section C: Short Essay	35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. The median of the following data is:
5, 8, 12, 15, 20, 25, 30
a) 12
b) 18
c) 15
d) 20
2. Standard deviation is a measure of:
a) Central tendency
b) Dispersion
c) Skewness
d) Correlation
3. The value of Pearson's coefficient of correlation (r) always lies between:
a) 0 and 1
b) $-\infty$ and $+\infty$
c) -0.5 and +0.5
d) -1 and +1
4. Multiple correlation measures the relationship between:
a) One dependent variable and two or more independent variables
b) Two variables only
c) One dependent and one independent variable
d) Two dependent variables
5. The equation of a straight line fitted by the least squares method is:
a) $y = ax^2 + bx + c$
b) $y = ab^x$
c) $xy = c$
d) $y = a + bx$

6. Poisson's distribution is a:
 - a) Continuous probability distribution
 - b) Discrete probability distribution
 - c) Normal distribution
 - d) Binomial distribution
7. Stratified sampling is used when the population is:
 - a) Homogeneous
 - b) Small
 - c) Heterogeneous
 - d) Unknown
8. Which of the following situations represents a Type I error?
 - a) Rejecting H_0 when H_0 is true
 - b) Rejecting H_0 when H_0 is false
 - c) Accepting H_0 when H_0 is true
 - d) Accepting H_0 when H_0 is false
9. The Wilcoxon Rank Sum Test is a:
 - a) Parametric test for paired samples
 - b) Non-parametric test for paired samples
 - c) Non-parametric test for two independent samples
 - d) Parametric test for more than two samples
10. The Mann-Whitney U test is mainly used to compare:
 - a) Means of two independent samples
 - b) Medians of two independent samples
 - c) Variances of two samples
 - d) Proportions of two populations
11. A histogram is a graphical representation of:
 - a) Qualitative data
 - b) Discrete frequency distribution
 - c) Time series data
 - d) Continuous frequency distribution
12. A cohort study is best described as:
 - a) A study that follows exposed and unexposed groups over time
 - b) A study that begins with diseased individuals
 - c) A study that compares past exposure only
 - d) A study conducted at one point in time
13. Confounding can best be described as:
 - a) Random error
 - b) Mixing of effects of exposure and another factor
 - c) Effect modification
 - d) Measurement bias
14. In a 2^k factorial design, blocking is primarily used to:
 - a) Reduce experimental error due to nuisance variables
 - b) Increase the number of treatment combinations
 - c) Confound higher-order interactions deliberately
 - d) Estimate all interaction effects precisely
15. The primary objective of a clinical trial is to:
 - a) Generate hypotheses
 - b) Observe disease progression
 - c) Collect epidemiological data
 - d) Establish causality between treatment and outcome

16. The main objective of DOE is to:
 - a) Reduce sample size
 - b) Identify significant factors affecting response
 - c) Control variation
 - d) Eliminate bias completely
17. A factorial design is one in which?
 - a) Only one factor is studied at a time
 - b) Factors are studied at different levels one by one
 - c) All possible combinations of factors and levels are studied
 - d) Randomization is not required
18. Central Composite Design is mainly used in:
 - a) Screening experiments
 - b) Response Surface Methodology
 - c) One-factor experiments
 - d) Observational studies
19. In a 2^3 factorial design, which interaction is generally assumed negligible?
 - a) AB
 - b) AC
 - c) BC
 - d) ABC
20. Which model is generally used for response optimization?
 - a) Quadratic model
 - b) Linear model
 - c) Exponential model
 - d) Logistic model

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. The following data represent the number of hours spent studying (X) and the marks obtained in an examination (Y) by 6 students

Student	X (Hours of Study)	Y (Marks)
1	2	48
2	4	52
3	6	60
4	8	65
5	10	72
6	12	78

Calculate Karl Pearson's coefficient of correlation (r) between hours of study and marks obtained using the direct method. Interpret the value of the correlation coefficient obtained

2. Derive the general form of a multiple linear regression equation and clearly state the assumptions underlying the model. Discuss any two problems that may arise in multiple regression analysis
3. What are non-parametric tests? Explain their advantages over parametric tests. Describe any four commonly used non-parametric tests

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. What is Karl Pearson's coefficient of correlation? Explain its formula and briefly discuss any two of its properties.
5. The following data shows the systolic blood pressure (in mmHg) of 8 patients measured before and after administering a new drug.

Patient	Before Treatment	After Treatment
1	150	142
2	148	140
3	160	155
4	155	148
5	152	145
6	149	143
7	158	150
8	154	147

Using a 5% level of significance, test whether the drug has resulted in a significant reduction in blood pressure. (Table value is 5.68)

6. Briefly describe the essential components involved in designing a clinical trial.
7. Write a brief note on SPSS highlighting their uses in statistical analysis and research.
8. What is hypothesis testing? Explain the steps involved in testing a statistical hypothesis.
9. Define confounding factors in epidemiological or clinical research. Illustrate your answer with a suitable example
10. A 2×2 factorial experiment is conducted, and the dissolution rate (%) obtained is shown below:

Binder	Low Compression (B_1)	High Compression (B_2)
A_1	78	85
A_2	82	90

Analyze the data using a two-way factorial design. Determine the main effects of binder and compression force.

11. Define historical design. Mention its importance in research and state any two limitations of historical research
12. Mention the objectives of optimization techniques in real-world problems and state any two applications

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Seventh Semester B. Pharm (SS1) Examination – June 2026**Subject: Industrial Pharmacy- 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** 20 Marks**Section B: Long Essay** 20 Marks**Section C: Short Essay** 35 Marks**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. USP 23 Dissolution apparatus 3 refers to:
 - a) reciprocating cylinder
 - b) rotating paddle
 - c) rotating basket
 - d) flow through cell
2. Space requirements in a pilot plant mainly depend on:
 - a) Employee salaries
 - b) Product packaging design only
 - c) Equipment placement, workflow, and storage needs
 - d) Advertisement expenses
3. Platform technology in pharmaceutical manufacturing refers to:
 - a) A fixed method used across multiple products or formulations
 - b) Online selling platforms for medicines
 - c) Packaging machinery only
 - d) Transportation of raw materials
4. According to SUPAC-MR Modified Release Solid Oral Dosage Forms guidance, Level 1 Changes are those:
 - a) that could have a significant impact on formulation quality and performance
 - b) that could have a moderate impact on formulation quality and performance
 - c) that are likely to have a significant impact on formulation quality and performance
 - d) that are unlikely to have any detectable impact on formulation quality and performance

5. Quality risk management (QRM) is a:
 - a) systematic process for the assessment, control, communication and review of risks
 - b) part of quality management focused on setting quality objectives
 - c) documented summary of a specific technology transfer project
 - d) systematic process for review of risks
6. The sharing of information about risk and risk management between the decision maker and other stakeholders is known as:
 - a) risk control
 - b) risk communication
 - c) risk analysis
 - d) risk evaluation
7. The addition of a known amount to a standard, sample or placebo typically for the purpose of confirming the performance of an analytical procedure is known as:
 - a) bracketing
 - b) robustness
 - c) scattering
 - d) spiking
8. Granularity of the technology transfer process includes:
 - a) API, excipients, finished products, and packaging materials
 - b) Hospital records only
 - c) Employee attendance
 - d) Marketing strategies
9. Which phase of clinical trial mainly evaluates efficacy in patients?
 - a) Phase 0
 - b) Phase I
 - c) Phase II
 - d) Phase IV
10. The FDA Office of Ombudsman is the agency's focal point for addressing or monitoring:
 - a) complaints and resolving disputes between companies and FDA Offices
 - b) the flow of licit and illicit controlled substances
 - c) false advertising of drugs
 - d) the use of pharmaceuticals
11. New Drug Application (NDA) – 505(b)(2) NDA is for:
 - a) Inventing a new drug
 - b) Modifying a new drug
 - c) Copying a new drug
 - d) Converting Brand to Generic drug

12. Which document provides investigators with essential drug information during clinical trials?
 - a) Investigator's Brochure (IB)
 - b) New Drug Application (NDA)
 - c) Marketing Plan
 - d) Patient Consent Form
13. OOS investigations must include:
 - a) Root cause analysis and corrective actions
 - b) Marketing surveys
 - c) Packaging redesign
 - d) Employee retraining only
14. Which of the following is not a function of Change Control Committee?
 - a) Coordinate the measures of change effected departments
 - b) Evaluating changes
 - c) Change request
 - d) Study the sale of the product
15. Which tool is commonly used in Six Sigma for process improvement?
 - a) DMAIC
 - b) SWOT
 - c) PEST
 - d) BCG Matrix
16. Which of the following is an example of change control?
 - a) Changing raw material supplier after evaluation and approval
 - b) Skipping documentation
 - c) Ignoring equipment maintenance
 - d) Conducting advertisements
17. In India, the approval procedure for a new drug requires:
 - a) Submission of clinical trial data, pharmacological and toxicological data, and manufacturing details to CDSCO
 - b) Only submission of marketing strategy to SLA
 - c) Filing of ISO certification documents
 - d) Direct approval from WHO without national authority involvement
18. Which of the following functions is NOT primarily under the jurisdiction of State Licensing Authorities (SLAs)?
 - a) Licensing of drug manufacturing units
 - b) Approval of clinical trials for new drugs
 - c) Monitoring sale and distribution of drugs
 - d) Issuing manufacturing licenses

19. ADR reporting in India is aided by:
- a) drug inspectors
 - b) Controlling authorities
 - c) PVPI
 - d) Regulatory assessment body
20. Which of the following best describes the regulatory pathway for a new drug in India?
- a) Marketing → Clinical Trial → Approval
 - b) Non-clinical studies → Clinical trials → Regulatory review → Approval
 - c) Advertisement → Manufacturing → Approval
 - d) Patent filing → Direct market launch

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the significant importance of personal, space and raw materials requirements for solid dosage forms with relevant documentation.
2. What is technology transfer? Explain the procedure and requirements for the successful transfer of technology from R & D to production.
3. What is drug regulatory affairs? Explain in detail the role of drug development teams.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Define SUPAC. Explain the levels of changes.
5. Briefly explain the validation requirements during technology transfer activity.
6. Explain Investigational New Drug Application and Investigator's Brochure.
7. Write a note on Total Quality Management.
8. Explain significance of Change control.
9. Explain applications of QbD.
10. Explain organization and responsibilities of state licensing authority.
11. Write a note on certificate of pharmaceutical product (COPP).
12. Explain functions of Central Drug Standard Control Organization (CDSCO).

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Sixth Semester B. Pharm (SS1) Examination – June 2026**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**

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. The Hippocratic theory and Pythagorean theory is the principle of:
 - a) Homeopathic system of medicine
 - b) Ayurvedic system of medicine
 - c) Chinese system of medicine
 - d) Unani system of medicine
2. The function of pitta in human body is to:
 - a) regulate nervous system
 - b) regulate energy production & digestion
 - c) regulate heat, formation of liquid
 - d) regulate body structure and lubrication
3. _____ is the process of removal of sand, dirt, foreign organic matter during primary processing of herbal raw material.
 - a) Bleaching
 - b) Sectioning
 - c) Garbling
 - d) Coating
4. Pheromones are:
 - a) Chemical pesticides
 - b) Microbial pesticides
 - c) Biochemical pesticides
 - d) Pesticide derived from plant extracts

5. Nutraceutical enzymes and probiotics are used for medical problems related to:
 - a) GIT
 - b) Kidney
 - c) Heart
 - d) Brain
6. Which of the following plant root is used as coffee substitute?
 - a) Alfalfa
 - b) Ginseng
 - c) Chicory
 - d) Amla
7. Which vitamin containing fruits and vegetables should be avoided while taking anticoagulant drugs?
 - a) Vitamin A
 - b) Vitamin D
 - c) Vitamin C
 - d) Vitamin K
8. Lycopene is obtained from:
 - a) Tomatoes
 - b) Potato
 - c) Pomegranate
 - d) Almonds
9. Examples of antioxidants used for skin care products EXCEPT:
 - a) Tomatoes
 - b) Orange
 - c) Turmeric
 - d) Lemon
10. Proportion of herbal decoction to honey or sugar in herbal syrup is :
 - a) 1:2
 - b) 2:2
 - c) 3:1
 - d) 5:1
11. Which among the following is a procedure for the preparation of phytosomes, EXCEPT:
 - a) Rotary evaporation
 - b) Antisolvent preparation
 - c) Solvent preparation
 - d) Film hydration

12. _____ is a natural sweetener obtained from *Dioscorephyllum cumminsi*.
- a) Stevioside
 - b) Glycyrrhizin
 - c) Thaumatin
 - d) Monellins
13. Margosan-O from neem is used as a:
- a) Pesticide
 - b) Antioxidant
 - c) Antihypertensive agent
 - d) Laxative
14. What is trademark?
- a) It is an unregistered mark used to promote or brand goods
 - b) Registered distinctive and deceptive sign to distinguish goods and services
 - c) A legal right granted to inventors to protect their inventions
 - d) A symbol used exclusively for illegal or unauthorized trade
15. DTAB refers to:
- a) Drug Technical Advisory Board
 - b) Drug Technical Admission Board
 - c) Drug Technical Adverse Board
 - d) Drug Technical Access Board
16. Which of the following contains the specifications for degradation products in drug substances, as per ICH guidelines?
- a) ICH 6QA
 - b) ICH 6QB
 - c) ICH Q3A
 - d) ICH Q1B
17. GMP of Ayurvedic, Siddha and Unani medicines are specified in _____ of D&C Act.
- a) Schedule T
 - b) Schedule A
 - c) Schedule M
 - d) Schedule X
18. The GMP for ASU drugs is specified in the rule _____ of D and C Act 1945:
- a) 157
 - b) 158
 - c) 159
 - d) 156

19. There should be a minimum of _____sq ft area for quality control section.
- a) 100
 - b) 150
 - c) 190
 - d) 200
20. Machineries required for manufacturing of medicines come under _____ of Schedule T.
- a) Part-I
 - b) Part-II
 - c) Part-III
 - d) Part-IV

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain good agricultural practices in cultivation of medicinal plants including organic farming.
2. Give the benefits and role of nutraceuticals in diabetes. Enlist the various herbs used as healthy food. Discuss any two of them.
3. Write a detailed note on herbal antioxidants and natural binders with suitable examples.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain in detail the concept of ayurvedic system of medicine.
5. Describe the possible side effects and interactions of Gingko Biloba and Ginseng.
6. Define herbal excipients with examples. Write their role in skin care cosmetics.
7. Describe the WHO guidelines for the assessment of herbal drugs.
8. Write a note on patenting of traditional knowledge and natural products with examples.
9. Explain the Schedule Z.
10. Write a note on machinery and equipments as components of GMP.
11. Write the objectives of Schedule T
12. Add a note on plant-based industries and institutions in India.

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Sixth Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. What is the main mechanism of action of β -lactam antibiotics?
 - a) Inhibition of protein synthesis
 - b) Inhibition of DNA replication
 - c) Inhibition of cell wall synthesis
 - d) Disruption of the cell membrane
2. Which of the following is NOT a β -lactam antibiotic?
 - a) Penicillin
 - b) Cephalosporin
 - c) Monobactam
 - d) Neomycin
3. Which of the following antibiotics belongs to the monobactam class?
 - a) Aztreonam
 - b) Ampicillin
 - c) Amoxicillin
 - d) Gentamicin
4. Tetracycline antibiotics are primarily used to treat:
 - a) Fungal infections
 - b) Viral infections
 - c) Bacterial infections
 - d) Parasitic infections

5. Clindamycin, classified as a lincosamide, is primarily used to treat:
 - a) Gram-negative bacterial infections
 - b) Fungal infections
 - c) Anaerobic bacterial infections
 - d) Malaria
6. Biguanides, such as proguanil, are known for:
 - a) Inhibiting dihydrofolate reductase in malaria parasites
 - b) Blocking protein synthesis
 - c) Preventing cell membrane formation
 - d) Interfering with mitochondrial function
7. Artesunate and artemether, derived from artemisinin, are primarily used to treat:
 - a) Viral infections
 - b) Bacterial infections
 - c) Protozoal infections, specifically malaria
 - d) Fungal infections
8. Which of the following is NOT a macrolide antibiotic?
 - a) Erythromycin
 - b) Clarithromycin
 - c) Chloramphenicol
 - d) Azithromycin
9. What is the primary mechanism of action of acyclovir in treating viral infections?
 - a) Inhibition of viral RNA polymerase
 - b) Inhibition of viral DNA polymerase
 - c) Disruption of viral capsid formation
 - d) Inhibition of reverse transcriptase
10. What is the mechanism of action of isoniazid in the treatment of tuberculosis?
 - a) Inhibition of mycolic acid synthesis in the bacterial cell wall
 - b) Inhibition of protein synthesis
 - c) Inhibition of RNA polymerase
 - d) Inhibition of DNA synthesis
11. Ethambutol, an anti-tubercular agent, primarily acts by:
 - a) Inhibiting cell wall synthesis
 - b) Inhibiting DNA gyrase
 - c) Disrupting mitochondrial function
 - d) Inhibiting arabinosyl transferase, affecting the bacterial cell wall

12. Which of the following quinolones has broad-spectrum activity and is commonly used to treat urinary tract infections?
 - a) Nalidixic acid
 - b) Para-amino salicylic acid
 - c) Ciprofloxacin
 - d) Ethionamide
13. Which of the following antifungal agents binds to ergosterol in fungal cell membranes, causing membrane disruption?
 - a) Fluconazole
 - b) Amphotericin-B
 - c) Clotrimazole
 - d) Naftifine
14. Fluconazole, a synthetic antifungal, is effective because it:
 - a) Binds to ergosterol
 - b) Inhibits the synthesis of ergosterol
 - c) Disrupts fungal DNA synthesis
 - d) Inhibits fungal protein synthesis
15. Cotrimoxazole is a combination of sulfamethoxazole and:
 - a) Metronidazole
 - b) Trimethoprim
 - c) Fluconazole
 - d) Clotrimazole
16. Dapsone is a sulfone drug primarily used for the treatment of:
 - a) Leprosy
 - b) Tuberculosis
 - c) Fungal infections
 - d) Malaria
17. Solid-phase synthesis, a key approach in combinatorial chemistry, involves:
 - a) The use of a solid support for chemical reactions
 - b) Dissolving reactants in solvents
 - c) The study of a drug's electronic properties
 - d) Measuring drug solubility
18. Which of the following best describes pharmacophore modeling?
 - a) The study of a drug's solubility
 - b) The identification of structural features in molecules necessary for biological activity
 - c) The prediction of a drug's partition coefficient
 - d) The synthesis of a new drug

19. Taft's steric parameter (E_s) in QSAR is used to quantify:
 - a) Steric hindrance of substituents
 - b) Hydrophobicity
 - c) Electronic effects
 - d) Solubility
20. Which of the following techniques is used to predict the interaction between a drug and its target protein?
 - a) Partition coefficient
 - b) Pharmacophore modeling
 - c) Docking
 - d) Hansch analysis

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Describe the chemical classification and degradation of tetracyclines. Highlight the important therapeutic products such as tetracycline, oxytetracycline, minocycline, and doxycycline.
2.
 - a) Discuss the structure-activity relationship (SAR) of aminoglycosides.
 - b) Write the synthesis and uses of chloramphenicol.
3. Describe the classification of antiviral agents and their mechanisms of action. Give the synthesis of acyclovir.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain the mechanism of action of β -lactamase inhibitors and discuss their role in enhancing the efficacy of β -lactam antibiotics.
5. What are biguanides and dihydrotriazines? Provide an overview of their therapeutic effects.
6. Describe the mechanism of action and chemical degradation of rifampicin and its role in the treatment of tuberculosis.
7. Describe the mechanism of action of amphotericin-B and its clinical applications.
8. Explain the mechanism of action of metronidazole and its therapeutic use.
9. Explain the mechanism of action of sulfamethoxazole in bacterial infections.
10. Explain the role of partition coefficient in quantitative structure-activity relationship.
11. Define molecular docking and discuss various docking techniques.
12. Differentiate between solid-phase synthesis and solution-phase synthesis in combinatorial chemistry.

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Sixth Semester B. Pharm (SS1) Examination – June 2026**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 20 Marks**Section B:** Long Essay 20 Marks**Section C:** Short Essay 35 Marks**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Which of the following ICH guideline categories primarily deals with drug stability studies?
 - a) Q-series
 - b) E-series
 - c) S-series
 - d) M-series
2. NABL provides laboratory accreditation services to laboratories that are performing tests and calibrations in accordance with:
 - a) ISO IEC 17025:1999
 - b) ISO IEC 18025:2005
 - c) ISO IEC 14000:2005
 - d) ISO IEC 9001:2007
3. Under ICH Q1A(R2) stability guidelines, accelerated stability testing is mainly conducted to:
 - a) Determine marketing price
 - b) Predict product shelf-life under exaggerated storage conditions
 - c) Eliminate long-term stability studies
 - d) Evaluate pharmacological activity only
4. Which is the key element of Qbd that should be within limit?
 - a) QTTP
 - b) CQA
 - c) CPP
 - d) Risk assessment

5. Which of the following is generally the first step in ISO registration/certification?
 - a) External audit
 - b) Corrective action implementation
 - c) Gap analysis against standard requirements
 - d) Certification issue
6. In the design of sterile manufacturing areas, the primary purpose of maintaining HEPA-filtered air systems is to:
 - a) Increase room temperature
 - b) Prevent microbial and particulate contamination
 - c) Reduce utility costs
 - d) Improve machinery speed
7. The purpose of maintaining purchase specifications for raw materials is to:
 - a) Ensure procurement from multiple vendors only
 - b) Guarantee consistency in quality, identity, and purity of materials
 - c) Reduce storage requirements
 - d) Avoid inspection of incoming materials
8. While selecting pharmaceutical equipment, the most critical factor to be considered is:
 - a) Color and appearance of equipment
 - b) Compatibility with the manufacturing process and ease of cleaning
 - c) Lowest purchasing cost only
 - d) Brand popularity
9. The self-sealing property of rubber closures for injectable containers is mainly evaluated to ensure:
 - a) Better labeling performance
 - b) Prevention of microbial contamination after repeated needle puncture
 - c) Increased shelf appearance
 - d) Lower manufacturing cost
10. Surface test for glass containers is also known as:
 - a) Hydrolytic resistance test
 - b) Etched surface test
 - c) Water attack test
 - d) Chemical test
11. What distinguishes a test article from a control article?
 - a) Anything taken out of a test system is a control article.
 - b) A test article is subjected to the test system and is received from the customer.
 - c) A control article is water or food that is subjected to the test system.
 - d) A control article is used to compare results with the specimens.

12. Which of the following records is considered critical in GLP compliance to reconstruct a nonclinical study?
 - a) Informal verbal instructions
 - b) Raw data, protocols, and final reports
 - c) Employee attendance registers only
 - d) Supplier advertisements
13. A market complaint related to particulate contamination in an injectable product should be categorized as:
 - a) Minor complaint
 - b) Technical complaint requiring detailed investigation
 - c) Financial complaint
 - d) Packaging-only complaint
14. Returned pharmaceutical goods may be reprocessed or reissued only if:
 - a) Outer package appears attractive
 - b) Product quality, storage history, and integrity are satisfactorily verified
 - c) Distributor requests immediate resale
 - d) Expiry date is not checked
15. Which of the following is the most appropriate method for disposal of cytotoxic pharmaceutical waste?
 - a) Open dumping
 - b) Incineration under controlled conditions
 - c) Disposal into municipal drainage
 - d) Storage without treatment
16. A Class I recall is generally initiated when:
 - a) There is no health risk associated with the product
 - b) The product may cause serious adverse health consequences or death
 - c) Product labeling contains spelling errors only
 - d) Product demand decreases in the market
17. The closeness of test results obtained by the method to the true value is known as:
 - a) accuracy
 - b) precision
 - c) specificity
 - d) robustness
18. How much % should be the humidity in initializing site during the installation of UV Spectrophotometer?
 - a) 45 to 80%
 - b) 10 to 20%
 - c) 15 to 25%
 - d) 40 to 45%

19. In pharmaceutical warehousing, the principle of FEFO (First Expiry, First Out) is mainly followed to:
- Improve packaging quality
 - Prevent usage or distribution of expired materials
 - Reduce warehouse staff requirements
 - Increase transportation efficiency
20. In qualification of a UV-Visible spectrophotometer, verification of wavelength accuracy is commonly performed using:
- Potassium dichromate solution or holmium oxide filter
 - Hydrochloric acid solution
 - Sodium hydroxide solution
 - Purified water

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- Explain the principle and procedure in NABL accreditation.
- Explain personnel, hygiene, clothing and the documents required related to organization.
- Explain the quality control tests for glass containers.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- What is quality by design? What are the essential elements of QbD approach?
- Enumerate ICH quality guidelines.
- Write the reasons for disqualification of testing facilities.
- Define and classify validation.
- Write a note on product recall.
- What are the contents of batch formula record?
- Write the principle involved in the calibration of pH meter.
- Write a note on validation master plan.
- Write a note on material management.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which drug acts as a mast cell stabilizer in asthma?
 - a) Salbutamol
 - b) Theophylline
 - c) Ipratropium
 - d) Cromolyn sodium
2. Which drug is commonly used as a nasal decongestant?
 - a) Cetirizine
 - b) Oxymetazoline
 - c) Montelukast
 - d) Codeine
3. Which drug is used as a laxative?
 - a) Ondansetron
 - b) Loperamide
 - c) Lactulose
 - d) Omeprazole
4. Which drug is used as an antiemetic?
 - a) Ranitidine
 - b) Bisacodyl
 - c) Metoclopramide
 - d) Guaifenesin

5. Sulfonamides act by inhibiting:
 - a) Protein synthesis
 - b) Cell wall synthesis
 - c) Folic acid synthesis
 - d) DNA gyrase
6. Which antibiotic inhibits DNA gyrase?
 - a) Erythromycin
 - b) Tetracycline
 - c) Ciprofloxacin
 - d) Penicillin
7. Which drug belongs to cephalosporins?
 - a) Amoxicillin
 - b) Ceftriaxone
 - c) Gentamicin
 - d) Azithromycin
8. Chloramphenicol causes which serious adverse effect?
 - a) Nephrotoxicity
 - b) Hepatotoxicity
 - c) Aplastic anemia
 - d) Ototoxicity
9. Ethambutol is used in the treatment of:
 - a) Malaria
 - b) Tuberculosis
 - c) Fungal infections
 - d) Viral infections
10. Amphotericin B is used for:
 - a) Bacterial infections
 - b) Viral infections
 - c) Fungal infections
 - d) Protozoal infections
11. Primaquine is mainly used for:
 - a) Blood schizonts
 - b) Liver stage of malaria parasite
 - c) Bacterial infections
 - d) Fungal infections

12. Tinidazole is used in:
 - a) Helminthic infection
 - b) Viral infection
 - c) Amoebiasis
 - d) Tuberculosis
13. Which drug is commonly used in sexually transmitted infections?
 - a) Isoniazid
 - b) Rifampicin
 - c) Doxycycline
 - d) Fluconazole
14. Which drug is an alkylating agent used in cancer therapy?
 - a) Methotrexate
 - b) Cyclophosphamide
 - c) Vincristine
 - d) Doxorubicin
15. Tacrolimus is a:
 - a) Immunostimulant
 - b) Antibiotic
 - c) Immunosuppressant
 - d) Antiviral
16. Biosimilars are:
 - a) Exact copies of synthetic drugs
 - b) Herbal medicines
 - c) Biologic products similar to original biologics
 - d) Antibiotics
17. Subacute toxicity refers to:
 - a) Immediate toxicity
 - b) Toxicity after repeated exposure for a short duration
 - c) Lifelong toxicity
 - d) Genetic toxicity
18. Mercury poisoning mainly affects:
 - a) Liver
 - b) Skin
 - c) Nervous system
 - d) Lungs

19. Carcinogenicity refers to:
- a) Birth defects
 - b) Genetic mutation
 - c) Cancer causing potential
 - d) Immune suppression
20. Chronotherapy is based on:
- a) Drug dose
 - b) Drug interaction
 - c) Biological timing of drug administration
 - d) Drug formulation

Section B

ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Discuss the pharmacology of drugs used in the management of chronic obstructive pulmonary disease, including classification, mechanism of action, and adverse effects.
2. Classify antibiotics and explain the mechanism of action, therapeutic uses, and adverse effects of beta-lactam antibiotics.
3. Describe the pharmacological management of viral infections, including classification, mechanism of action, and therapeutic uses of antiviral drugs.

Section C

SHORT NOTES (Answer any SEVEN questions)

7x5= 35 Marks

4. Write a note on drugs used as nasal decongestants, including their mechanism of action and adverse effects.
5. Describe the classification and mechanism of action of aminoglycoside antibiotics.
6. Write a note on drugs used in the treatment of helminthic infections with suitable examples.
7. Explain the pharmacological management of urinary tract infections with suitable examples.
8. Describe immunostimulant drugs and their therapeutic applications.
9. Write a note on vinca alkaloids used in cancer chemotherapy.
10. Describe the clinical features and management of lead poisoning.
11. Write a note on genotoxicity, carcinogenicity, and mutagenicity.
12. Explain the significance of biological clock in drug administration and therapy.

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(Deemed to be University)

Sixth Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Ionized drugs easily dissolve in the lumen of the GIT, because their partition coefficient & lipophilicity is almost:
 - a) Zero
 - b) One
 - c) Two
 - d) Three
2. Fat soluble vitamins are binding to:
 - a) α_1 Globulin
 - b) α_2 Globulin
 - c) β_1 Globulin
 - d) β_2 Globulin
3. Unit for perfusion rate is:
 - a) ml/hr
 - b) ml/min
 - c) mg/hr
 - d) mg/min
4. During oedema the albumin concentration is:
 - a) < 2.5 gm %
 - b) > 2.5 gm %
 - c) < 1.5 gm %
 - d) < 0.5 gm %

5. Renal clearance values___ are indicative of tubular secretion.
- exceeding 230 ml/min
 - exceeding 330 ml/min
 - exceeding 120 ml/min
 - exceeding 500 ml/min
6. Transport mechanisms involved in sweat excretion pathways are:
- Active secretion
 - Passive diffusion
 - Active transport
 - Carrier mediated transport
7. Creatinine is excreted in the urine by _____ process only.
- active reabsorption
 - glomerular filtration
 - active tubular secretion
 - passive tubular reabsorption
8. With intravenous injection of a drug the percentage of bioavailability achieved is:
- 0
 - 50
 - 90
 - 100
9. Unit for first order rate constant (Ka):
- 1/hr
 - Mg/hr
 - Lr
 - Hr
10. Clearance can be related to half life by the following equation:
- $Cl_T = KE \ t_{1/2}/0.693$
 - $Cl_T = 0.693 \ t_{1/2} / Vd$
 - $Cl_T = 0.693 \ Vd / t_{1/2}$
 - $Cl_T = KE. Vd / 0.693$
11. The rate of drug movement between compartment is described by:
- Zero order kinetics
 - First order kinetics
 - Second order kinetics
 - Mixed order kinetics

12. Absorption rate constant in one compartment open model is determined by:
- Wagner Nelson Method
 - Michalis Menten Kinetics
 - Sigma Minus Method
 - Excretion rate method
13. Rate constant K_{21} represents the movement of drug from:
- Compartment 1 to 2
 - Compartment 2 to 1
 - Compartment 1 to 1
 - Compartment 2 to 2
14. Super position principles are used when all the?
- PK processes are linear
 - PK processes are non- linear
 - PK processes are first order kinetics
 - PK processes are second order kinetics
15. In repetitive IV injection if the dose $D_0 = 100$ mg by rapid injection every $t_{1/2}$, then $T = t_{1/2}$, after the 1st $t_{1/2}$ the drug in body is:
- 50 mg
 - 75 mg
 - 150 mg
 - 175 mg
16. The time need to reach 95 % Cave is approximately ____ half lives of the drug.
- 5
 - 8
 - 10
 - 12
17. If drug exhibits non-linearity the following parameter will decrease with dose:
- C_{max}
 - K_a
 - AUC
 - $t_{1/2}$
18. The decreasing order of drug metabolizing ability of various organs is:
- Liver > Intestine > Lungs > Kidneys
 - Liver > Lungs > Kidneys > Intestine
 - Kidneys > Lungs > Intestine > Liver
 - Intestine > Kidneys > Lungs > Liver

19. Phase I reactions are also called as:
- Synthetic reactions
 - Conjugation reactions
 - Functionalization reactions
 - True detoxification reactions
20. Class I compounds are predominantly eliminated by:
- Kidney
 - Lungs
 - Liver
 - Saliva

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- Define drug distribution. Describe the factors affecting distribution.
- Define bioavailability. Explain methods to enhance the bioavailability.
- Describe in detail one-compartment open model for a drug administered as IV bolus. Write the schematic representation, graphs and equations for the same.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Explain the kinetics of protein binding.
- Define bioequivalence. Explain various types of equivalence.
- How to determine KE using rate of excretion method from urine data?
- What is principle of super position?
- Explain two-compartment open model for a drug administered as IV Bolus.
- Draw the plasma concentration time-plot for multiple oral administration.
- Explain the various factors leading to non-linearity.
- How to estimate K_m and V_{max} ?
- What is biotransformation of drugs? Explain phase I reactions of biotransformation of drugs.

JSS Academy of Higher Education & Research, Mysuru

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Fifth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Preformulation studies are critical because they:
 - a) Predict the behavior of the drug in dosage forms
 - b) Decrease the cost of production
 - c) Ensure faster clinical trials
 - d) Avoid the need for packaging
2. Which of the following properties is crucial for determining the ease of handling and processing during drug formulation?
 - a) Flow properties
 - b) pKa
 - c) Polymorphism
 - d) Partition coefficient
3. Polymorphism refers to:
 - a) Different crystal forms of the same drug
 - b) Changes in the pH of the drug solution
 - c) The ability of a drug to exist in liquid and solid forms simultaneously
 - d) A drug's interaction with excipients
4. The BCS classification is based on which of the following criteria?
 - a) Solubility and permeability
 - b) Molecular weight and color
 - c) Bioavailability and taste
 - d) Stability and melting point

5. Granulation is a process primarily used for:
 - a) Dissolution enhancement
 - b) Particle size reduction
 - c) Improvement of powder flow properties
 - d) Drying of wet mass
6. Which of the following is NOT a type of tablet coating?
 - a) Sugar coating
 - b) Film coating
 - c) Enteric coating
 - d) Compression coating
7. What is the primary role of alcohol in elixir formulation?
 - a) Sweetening agent
 - b) Preservative and co-solvent
 - c) Thickening agent
 - d) Flavoring agent
8. The term "creaming" in emulsions refers to:
 - a) The breaking of an emulsion
 - b) The separation of oil from water
 - c) The upward movement of dispersed droplets
 - d) The coalescence of the dispersed phase
9. Pellets are commonly used in pharmaceutical formulations for which of the following reasons?
 - a) They increase the dosage size
 - b) They allow for uniform coating and controlled release
 - c) They are more compact in nature
 - d) They improve the drug's solubility
10. Which of the following capsule sizes holds the largest volume?
 - a) Size 0
 - b) Size 1
 - c) Size 5
 - d) Size 00
11. Which technique is used to improve the bioavailability of drugs in hard gelatin capsules?
 - a) Coating the capsules
 - b) Microencapsulation of the drug
 - c) Softening the gelatin shell
 - d) Adding flavoring agents

12. Soft gelatin capsules are particularly suitable for encapsulating:
 - a) Dry powders
 - b) Volatile oils, liquids, and semi-solids
 - c) Lyophilized products
 - d) Compressed tablets
13. Which of the following is NOT an advantage of parenteral products?
 - a) Rapid onset of action
 - b) Can be used in unconscious patients
 - c) High patient compliance
 - d) Suitable for drugs that are inactivated by the gastrointestinal tract
14. The importance of isotonicity in parenteral products is to:
 - a) Increase drug solubility
 - b) Prevent irritation at the injection site
 - c) Enhance drug bioavailability
 - d) Ensure rapid absorption
15. Ophthalmic preparations are required to be:
 - a) Isotonic, sterile, and free from particles
 - b) Flavored and isotonic
 - c) Isotonic, colored, and sterile
 - d) Sterile, thick, and fragrant
16. Aseptic processing in parenteral product manufacturing is crucial because:
 - a) It prevents microbial contamination
 - b) It speeds up production
 - c) It enhances product taste
 - d) It improves the appearance of the product
17. Cold creams are classified as:
 - a) Water-in-oil emulsions
 - b) Oil-in-water emulsions
 - c) Microemulsions
 - d) Suspension
18. Which of the following ingredients is used as a surfactant in shampoos?
 - a) Sodium lauryl sulfate
 - b) Stearic acid
 - c) Petrolatum
 - d) Propylene glycol

19. In hair dye formulations, which of the following chemicals is commonly used as an oxidizing agent?
- a) Hydrogen peroxide
 - b) Paraffin wax
 - c) Titanium dioxide
 - d) Zinc oxide
20. What is the primary purpose of the valve in an aerosol container?
- a) To prevent contamination
 - b) To regulate the flow and amount of product released
 - c) To seal the container
 - d) To stabilize the contents

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Enlist the methods of enhancing the solubility of drugs.
2. Classify granulation techniques. Discuss the wet granulation method along with equipment's used in each step.
3. Explain the rotary die process for manufacturing of soft gelatin capsules.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. What are hydrates and solvates? Give examples.
5. Define tablet coating, write the types of coating and explain the film coating composition.
6. Explain the quality control tests of capsules.
7. Discuss in detail the production facilities for parenteral.
8. Discuss the formulation of eye ointment.
9. Explain in vitro methods for testing of pyrogens.
10. Write a detailed note on propellants.
11. Emphasize on formulation of lipstick.
12. Explain the factors influencing choice of containers.

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Fifth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which drug is used as a mast cell stabilizer?
 - a) Cetirizine
 - b) Cromolyn sodium
 - c) Loratadine
 - d) Promethazine
2. Which antihistamine causes maximum sedation?
 - a) Fexofenadine
 - b) Loratadine
 - c) Diphenhydramine
 - d) Cetirizine
3. Cisplatin acts by:
 - a) Inhibiting folic acid synthesis
 - b) Alkylating DNA
 - c) Cross-linking DNA
 - d) Inhibiting microtubules
4. Vincristine belongs to which category?
 - a) Alkylating agent
 - b) Antimetabolite
 - c) Plant product
 - d) Antibiotic

5. Which diuretic inhibits carbonic anhydrase?
 - a) Furosemide
 - b) Spironolactone
 - c) Acetazolamide
 - d) Mannitol
6. Mannitol is a:
 - a) Loop diuretic
 - b) Thiazide diuretic
 - c) Osmotic diuretic
 - d) Potassium sparing diuretic
7. Which drug is potassium-sparing diuretic?
 - a) Furosemide
 - b) Hydrochlorothiazide
 - c) Spironolactone
 - d) Acetazolamide
8. Clonidine acts as:
 - a) Beta blocker
 - b) ACE inhibitor
 - c) Alpha-2 agonist
 - d) Calcium channel blocker
9. Which drug is a Class III anti-arrhythmic?
 - a) Lidocaine
 - b) Amiodarone
 - c) Quinidine
 - d) Propranolol
10. Cholestyramine acts by:
 - a) Inhibiting cholesterol synthesis
 - b) Binding bile acids
 - c) Increasing HDL
 - d) Decreasing triglycerides
11. Clopidogrel is a:
 - a) Anticoagulant
 - b) Thrombolytic
 - c) Antiplatelet drug
 - d) Coagulant

12. Sotalol belongs to:
- a) Class I A
 - b) Class I B
 - c) Class III
 - d) Class IV
13. Which hormone is used in hypothyroidism?
- a) Methimazole
 - b) Propylthiouracil
 - c) Levothyroxine
 - d) Insulin
14. Which corticosteroid is long-acting?
- a) Hydrocortisone
 - b) Cortisone
 - c) Dexamethasone
 - d) Prednisolone
15. Nandrolone is a:
- a) Estrogen
 - b) Androgen
 - c) Progesterone
 - d) Corticosteroid
16. Tadalafil is used for:
- a) Diabetes
 - b) Hypertension
 - c) Erectile dysfunction
 - d) Asthma
17. Pioglitazone belongs to:
- a) Biguanides
 - b) Sulfonylureas
 - c) Thiazolidinediones
 - d) Meglitinides
18. Acarbose acts by:
- a) Increasing insulin secretion
 - b) Inhibiting glucose absorption
 - c) Increasing insulin sensitivity
 - d) Decreasing glucagon

19. Benzocaine is a:
- a) Amide local anesthetic
 - b) Ester local anesthetic
 - c) Opioid analgesic
 - d) Sedative
20. Lignocaine primarily blocks:
- a) Calcium channels
 - b) Sodium channels
 - c) Potassium channels
 - d) Chloride channels

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Define and classify anti-neoplastic agents with examples. Write a note on alkylating agents and antimetabolites.
2. Classify anti-anginal agents with examples. Explain the chemistry of calcium channel blockers and vasodilators.
3. Classify anti-hyperlipidemic agents. Give the structure, mechanism of action and uses of anti-hyperlipidemic agents.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Write a short note on H₂-receptor antagonists with examples, mechanism of action, and therapeutic uses.
5. Explain the chemistry of ACE inhibitors with suitable examples.
6. Write a short note on drugs used in congestive heart failure with examples.
7. Write a short note on stereochemistry and metabolism of steroids.
8. Explain the chemistry of androgens and anabolic steroids.
9. Write a short note on antithyroid drugs with examples.
10. Define and classify anti-diabetic agents. Give the structure of metformin and pioglitazone.
11. Classify local anaesthetic agents with examples. Write a note on its SAR.
12. Outline the synthesis of: a) Tolbutamide b) Benzocaine.

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Fifth Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Steroids and isoprenoids are derived from _____ pathway.
 - a) Acetate mevalonate
 - b) Shikimic acid
 - c) Amino acid
 - d) Methylerythritol phosphate (MEP)
2. Antranillic acid is an intermediate biosynthetic component of _____ pathway.
 - a) Amino acid
 - b) Acetate
 - c) Shikimic acid
 - d) Lactic acid
3. Squalene structure contains ____ number of carbon atom.
 - a) 26
 - b) 28
 - c) 30
 - d) 32
4. Anabesine is biosynthesized in _____ plant.
 - a) *Digitalis purpurea*
 - b) *Digitalis lanata*
 - c) *Nicotiana glauca*
 - d) *Withania somnifera*

5. Tannic acid is an antidote in _____ poisoning.
 - a) Iodine
 - b) Cyanide
 - c) Arsenic
 - d) Alkaloids
6. Cupraloin test is positive due to presence of:
 - a) Barbaloin
 - b) Isobarbaloin
 - c) Aloin A
 - d) Aloinside B
7. In condensed tannin, ferric chloride gives which colour:
 - a) Blue
 - b) Red
 - c) Violet
 - d) Green
8. Coriander belongs to the family:
 - a) Umbelliferae
 - b) Graminae
 - c) Lauraceae
 - d) Zingiberaceae
9. Menthol is example for:
 - a) Diterpene
 - b) Triterpene
 - c) Monoterpene
 - d) Polyterpene
10. Rauwolfia belongs to the family:
 - a) Rubiaceae
 - b) Apocyanaceae
 - c) Leguminosae
 - d) Rosaceae
11. Rutin is chemically:
 - a) saponin glycoside
 - b) cardiac glycoside
 - c) flavonoidal glycoside
 - d) anthraquinone glycoside

12. Vitali Morin test is used to detect which compound:
- a) Tropane alkaloid
 - b) Quinoline alkaloid
 - c) Flavonoid glycoside
 - d) Anthraquinone glycoside
13. Artemisinin present in _____ species.
- a) *Artemisia brevifolia*
 - b) *Artemisia marimata*
 - c) *Artemisia cina*
 - d) *Artemisia annua*
14. Yam is synonym of:
- a) Safed musali
 - b) Dioscorea
 - c) Liquorice
 - d) Strophanthum
15. Atropine categorized as :
- a) parasympatholytic drug
 - b) anti-tumor drug
 - c) sympatholytic drug
 - d) parasympathomimetic drug
- 16 Digoxin obtained from _____ plant.
- a) *Digitalis purpurea*
 - b) *Digitalis lanata*
 - c) *Primula vulgaris*
 - d) *Symphytum officinale*
17. Distillation is used to extract:
- a) Tannins
 - b) Glycoside
 - c) Alkaloid
 - d) Volatile oil
18. The residue obtained after the extraction process:
- a) Menstruum
 - b) Extract
 - c) Marc
 - d) Solvent

19. The principle involved in thin layer chromatography:
- Adsorption
 - Affinity
 - Ion exchange
 - Partition
20. The principle separation in gas liquid chromatography is:
- Adsorption
 - Partition
 - Boiling point difference
 - Melting point difference

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- Write a note on acetate pathway and its significance.
- Write the biological source, morphology, microscopy, chemical constituents, chemical tests and uses of senna.
- Explain the method of isolation and estimation for quinine and atropine.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Write a note on tracer techniques used in biogenetic studies.
- Give botanical source, chemical constituents, chemical tests and uses of aloes.
- Explain the isolation, identification and estimation of glycyrrhetic acid.
- Discuss the industrial production and uses of vincristine.
- Discuss the industrial production and estimation of forskolin.
- Write a note on industrial production and utilization of digoxin.
- Write a note on supercritical fluid extraction method.
- Explain electrophoresis and GC with their applications.
- Explain microwave assisted extraction.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fifth Semester B. Pharm (SS1) Examination – June 2026

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	20 Marks
Section B: Long Essay	20 Marks
Section C: Short Essay	35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which of the following ACE inhibitors is not a prodrug?
 - a) Ramipril
 - b) Enalapril
 - c) Perindopril
 - d) Lisinopril
2. Digitalis toxicity is enhanced by co-administration of which drug?
 - a) Quinidine
 - b) Potassium
 - c) Potassium sparing diuretics
 - d) Antacid
3. One of the important toxic effects of nitroprusside is:
 - a) Hypertension
 - b) Neutropenia
 - c) Decreased thyroid function
 - d) Angio-odema
4. Which drug increases lipoprotein lipase (LPL) activity in adipose tissue?
 - a) Cholestyramine
 - b) Lovastatin
 - c) Nicotinic acid
 - d) Gemfibrozil

5. Which is the most appropriate diuretic for treating acute pulmonary oedema?
 - a) Loop diuretics
 - b) Thiazide diuretics
 - c) Potassium-sparing diuretics
 - d) Osmotic diuretics
6. All the following diuretics will be effective in a person suffering from Addison's disease, EXCEPT:
 - a) Clorthiazide
 - b) Urea
 - c) Spironolactone
 - d) Furosemide
7. Desmopressin is preferred over a vasopressin because desmopressin is:
 - a) More potent
 - b) More selective for V receptor
 - c) Has more vasoconstrictor activity
 - d) Longer acting
8. The following drugs are useful in diabetes insipidus EXCEPT:
 - a) Desmopressin
 - b) Lithium
 - c) Chlorpropamide
 - d) Hydrochlorothiazide
9. A 35-year-old man with a history of duodenal ulcer arrives for his annual appointment and complains of bilateral tenderness and swelling of his breasts. Upon further examination, a diagnosis of gynecomastia is made. If his condition was drug-induced, which medication below was he most likely taking?
 - a) Cimetidine
 - b) Famotidine
 - c) Nizatidine
 - d) Ranitidine
10. Which class of eicosanoids is involved in promoting vasodilation, relaxation of vascular smooth muscle, and inhibition of platelet aggregation?
 - a) Prostaglandins
 - b) Leukotrienes
 - c) Thromboxanes
 - d) Lipoxins
11. A patient takes a drug that has analgesic & antipyretic effects but is not anti-inflammatory. It can cause potentially fatal hepatotoxicity when large doses (e.g. 15 grams) are consumed over a short time period, especially in alcoholic patients, or those with pre-existing liver disease. Which drug best fits this description?
 - a) Acetaminophen
 - b) Aspirin
 - c) Colchicine
 - d) Ibuprofen

12. Pharmacologic therapy can be initiated after how long, once the acute gout attack has taken place?
- a) after 48 hours
 - b) within 1 hour
 - c) within 24 hours
 - d) after 24 hours
13. Which of the following hormone is produced by a pituitary gland in both males and females but functional only in a female?
- a) Relaxin
 - b) Prolactin
 - c) Vasopressin
 - d) Somatotrophic hormones
14. In chronically deficient patients, this abnormality is directly related to the enlargement of the thyroid gland:
- a) Impaired conversion of T3 and T4
 - b) Reduced activity of thyroperoxidase
 - c) Elevated levels of TSH
 - d) An antibody that binds to the TSH receptor in the thyroid gland
15. Which is a long-term action of insulin?
- a) Activation of insulin receptors
 - b) Regulation of gene transcription
 - c) Inhibition of hepatic glucose production
 - d) Influences intracellular enzyme activities
16. The hormone released by the adrenal glands allows the body to make energy more readily available from the stored nutrients:
- a) Cortisol
 - b) ACTH
 - c) Epinephrine
 - d) Norepinephrine
17. What is the reason why some human females tend to develop male characteristics such as degeneration of ovaries and uterus, beard, enlargement of the clitoris?
- a) surgical removal of mammary glands
 - b) overproduction of adrenal androgens
 - c) damage to the posterior pituitary
 - d) overproduction of estrogen and testosterone
18. The action of contraceptive is:
- a) Prevention of ovulation and fertilization only
 - b) Prevent ovulation only
 - c) Prevent rapid passing of eggs in the oviduct
 - d) Prevention of ovulation, implantation and fertilization only

19. Which of the following method of bioassay is the most accurate method for determination of unknown concentration of drug?
- Matching
 - Bracketing
 - Interpolation
 - End point method
20. Male gynecomastia is seen with:
- Spironolactone
 - Clomiphene
 - Testosterone
 - Tamoxifen

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain in detail the pharmacology of adrenergic blockers and centrally acting anti-hypertensives.
2. Classify diuretics according to their site of action. Explain the mechanism of action, pharmacological effects of diuretics.
3. Explain the pharmacology of Histamine, 5-HT and their antagonists.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Describe the pharmacological actions of digitalis.
5. What are anti-diuretics? Give examples. Add a note on mechanism of action and uses of ADH.
6. Write a note on anti-gout drugs.
7. Explain the pharmacology of meglitinides.
8. Classify different types of insulin. Explain its pharmacology.
9. Explain mechanism, pharmacokinetics and adverse effects of Parathormone and Calcitonin.
10. Explain the pharmacological actions of various sex hormones.
11. Define bioassay. Classify the different types of bioassay.
12. Write a note on drugs acting on the uterus.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which of the following best defines a galenical?
 - a) A synthetic drug derived from a chemical process.
 - b) A traditional pharmaceutical preparation made from natural sources, especially plants.
 - c) A sterile injectable preparation.
 - d) A biotechnologically engineered drug.
2. Which of the following is quantitative microscopy?
 - a) Refractive index
 - b) Moisture content
 - c) Lycopodium spore method
 - d) Ash value
3. One of the following is not an un-organized drug:
 - a) Olive oil
 - b) Black Catechu
 - c) Ephedra
 - d) Tragacanth
4. He is remembered for his famous Oath which is administered to the doctors:
 - a) Gregor Mendel
 - b) William Withering
 - c) Galen
 - d) Hippocrates

5. 2, 4-dichlorophenoxy acetic acid (2,4-D) in high concentration used as:
 - a) Increase metabolites in plants
 - b) Promote fungal growth in plants
 - c) Selective weed killer
 - d) Acts as source of vitamin
6. The fertile soil type generally preferred for the cultivation of most of the medicinal plants is:
 - a) Sandy soil
 - b) Clay soil
 - c) Loamy soil
 - d) Silty soil
7. Which of the following is not an example for biofertilizer?
 - a) Azotobacter
 - b) Rhizobium
 - c) Campylobacter
 - d) Azolla
8. Which of the following is used as rodenticide?
 - a) Superphosphate
 - b) Warfarin
 - c) Tetradifon
 - d) Fluorouracil
9. Synthetic seeds are produced by the encapsulation of somatic embryos with:
 - a) Sodium acetate
 - b) Sodium nitrate
 - c) Calcium citrate
 - d) Sodium alginate
10. Amorphous mass of undifferentiated tissue is called as:
 - a) Protoplast
 - b) Nucleus
 - c) Endoplasm
 - d) Callus
11. Which of the following plant cells show totipotency?
 - a) Cork cells
 - b) Meristem
 - c) Xylem vessels
 - d) Vascular bundle

12. The ability of single cells to divide and produce all differentiated cells in the entity:
- a) Multipotent
 - b) Pluripotent
 - c) Totipotency
 - d) Unipotent
13. Dragendorff's reagent:
- a) Potassium bismuth iodide
 - b) Saturated solution of picric acid
 - c) Iodine in potassium iodide
 - d) Mercuric potassium iodide
14. Which of the following tests gives a positive reaction for anthraquinone glycosides?
- a) Ferric chloride test
 - b) Goldbeater skin test
 - c) Matchstick test
 - d) Borntrager's test
15. Minimum dose theory is related to which system of medicine?
- a) Ayurveda
 - b) Siddha
 - c) Unani
 - d) Homeopathy
16. Which of the following is not a glycoside drug?
- a) Aloes
 - b) Senna
 - c) Digitalis
 - d) Nux-vomica
17. Which of the following drug belongs to family Flacourtiaceae?
- a) Castor oil
 - b) Chaulmoogra oil
 - c) Cotton
 - d) Hemp
18. Fiehe's test is done for:
- a) Gum tragacanth
 - b) Gum acacia
 - c) Honey
 - d) Gelatin

19. The presence of enzyme oxidase is the confirmative test for:

- a) Acacia
- b) Tragacanth
- c) Guar gum
- d) Honey

20. Cardiovascular agent from marine source:

- a) Bryostatins
- b) Discodermolide
- c) Cytarabine
- d) Octopamine

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- 1. Give a descriptive note on physical and chemical methods of evaluation.
- 2. Describe mutation and polyploidy as tool for crop improvement. Discuss its application.
- 3. a) Discuss historical development of plant tissue culture.
b) Explain the growth stages of plant tissue culture.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- 4. Explain leaf constants with suitable examples.
- 5. Discuss various methods of in-situ conservation.
- 6. Discuss various steps involved in protoplast culture.
- 7. Give the role of pharmacognosy in allopathy and traditional systems of medicine.
- 8. Define and classify alkaloids. Give general tests for identification of alkaloids.
- 9. Explain the homeopathy and Unani system of medicine.
- 10. Give the source, method of preparation, chemical constituents and uses of honey.
- 11. What are hallucinogens? Discuss any two drugs under the category.
- 12. Write a note on cotton as surgical fibres.

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Fourth Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section - A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Meso compound is a:
 - a) Compound with multiple chiral centers and no plane of symmetry
 - b) Compound with multiple chiral centers and a plane of symmetry
 - c) Compounds with a single chiral center
 - d) Compounds with no chiral center
2. Diastereomers are:
 - a) Stereoisomers that are mirror images of each other
 - b) Stereoisomers that are not mirror images of each other
 - c) Compounds with different molecular formulas and different structure
 - d) Compounds with different molecular formulae and same structure
3. Equimolar mixture of a pair of enantiomers are called:
 - a) Resolution
 - b) Racemization
 - c) Racemic modification
 - d) Epimerization
4. The process of separating racemic modifications into its individual enantiomers is called:
 - a) Racemization
 - b) Resolution
 - c) Epimerization
 - d) Asymmetric synthesis

5. Cis- trans isomer is possible in:
- Alkanes
 - Alkenes
 - Alkynes
 - Aromatic compounds
6. Which of the following is an example of a conformation:
- Cis trans isomer of but-2-ene
 - R and S configuration of a chiral center
 - Keto and enol forms of a compound
 - Chair and boat form of cyclohexane
7. Isomers that differ in the arrangement of atoms in space due to restricted rotation around a double bond:
- Stereoisomers
 - Structural isomers
 - Optical isomers
 - Geometrical isomers
8. Geometrical isomerism is shown by:
- Lactic acid
 - Maleic acid
 - 1 butene
 - 1,1 dichloroethylene
9. The heteroatom in pyrrole is:
- Nitrogen
 - Oxygen
 - Sulphur
 - Phosphorous
10. The structure of furan is:
- 5 membered ring with one nitrogen atom
 - 5 membered ring with one oxygen atom
 - 6 membered ring with one oxygen atom
 - 6 membered ring with one nitrogen atom
11. In the nomenclature of heterocyclic compounds the prefix "aza" indicates which hetero atom:
- Oxygen
 - Nitrogen
 - Sulphur
 - Phosphorous

12. Structure of thiophene is:
- 5 membered ring with 1 sulphur atom
 - 5 membered ring with 1 nitrogen atom
 - 5 membered ring with 1 oxygen atom
 - 5 membered ring with 1 hydrogen atom
13. Structure of Isoquinoline is:
- A benzene ring fused with pyridine ring
 - A pyridine ring fused with imidazole ring
 - A pyrimidine ring fused with pyrazole ring
 - A pyridine ring fused with pyrazole ring
14. Quinoline undergoes electrophilic substitution reaction at:
- Position 2 and 3
 - Position 1 and 2
 - Position 4 and 8
 - Position 5 and 8
15. Basicity of pyridine is due to:
- Presence of double bonds
 - Presence of benzene ring
 - Lone pair of electrons in nitrogen atom
 - Presence of substituent group
16. Pyridine undergoes electrophilic substitution reaction at:
- 2nd position
 - 3rd position
 - 5th position
 - 7th position
17. Beckmann rearrangement involves the conversion of:
- Amide to oxime
 - Oxime to amide
 - Ketone to amide
 - Aldehyde to amide
18. Schmidt rearrangement involves the loss of:
- Water
 - Carbondioxide
 - Nitrogen gas
 - Hydrogen gas

19. Clemmensen reduction involves the reaction of a carbonyl compound with:
- a) Zinc amalgam and HCl
 - b) Lithium aluminium hydride
 - c) Nascent hydrogen
 - d) Sodium borohydride
20. Claisen Schmidt reaction is often used to synthesize:
- a) α,β -unsaturated ketones
 - b) β -hydroxy ketone
 - c) α -hydroxy ketone
 - d) 1,3-diketones

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain DL and RS system of nomenclature of optical isomers.
2. Explain stereospecific and stereoselective reactions.
3. Classify heterocyclic compounds with examples. Give two methods of synthesis of thiophene, furan and pyrrole. (4+6)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5=35 Marks

4. Explain enantiomerism and diastereomerism with suitable examples.
5. Explain stereoisomerism in biphenyl compounds.
6. Write a note on nomenclature of heterocyclic compounds.
7. Give any three methods of preparation and medicinal uses of quinoline.
8. Explain electrophilic and nucleophilic substitution reactions of pyridine.
9. Explain any two synthesis and medicinal uses of pyrimidine and imidazole.
10. Elucidate the mechanism of Claisen Schmidt condensation. Give its synthetic applications.
11. Discuss the reaction, mechanism and applications of Beckmann rearrangement.
12. Explain the mechanism and applications of Birch reduction.

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Fourth Semester B Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Which of the reaction belongs to Phase I metabolism?
 - a) Glucuronidation
 - b) Acetylation
 - c) Amino acid conjugation
 - d) Oxidation
2. Prodrugs are mainly designed for the following purposes, EXCEPT:
 - a) Improve the taste
 - b) Improve the absorption
 - c) Improve the solubility
 - d) Improve the therapeutic efficacy
3. The functional group -NH₂ present in drug undergoes following interaction:
 - a) Hydrogen bonding
 - b) Co-valent bonding
 - c) Complexation
 - d) Vander Waals
4. What is meant by a lead compound in medicinal chemistry?
 - a) A drug containing the element lead
 - b) A leading drug in a particular area of medicine
 - c) A compound that acts as the starting point for drug design and development
 - d) A drug which is normally the first to be prescribed for a particular ailment

5. Direct acting sympathomimetic agent:
 - a) Nor epinephrine
 - b) Pseudoephedrine
 - c) Hydroxy amphetamine
 - d) Propylhexedrine
6. Example of non-selective β receptor antagonist:
 - a) Metoprolol
 - b) Propranolol
 - c) Prazosin
 - d) Terbutaline
7. Selective α - receptor antagonist is:
 - a) Prazosin
 - b) Methyldopa
 - c) Phentolamine
 - d) Naphazoline
8. Clonidine belongs to:
 - a) α receptor antagonist
 - b) α receptor agonist
 - c) β receptor agonist
 - d) β receptor antagonist
9. Which of the following is not a natural cholinergic blocker?
 - a) Hyoscyamine
 - b) Atropine
 - c) Scopolamine
 - d) Propantheline bromide
10. Which among the following is not an anticholinesterase drug?
 - a) Edrophonium chloride
 - b) Physostigmine
 - c) Malathion
 - d) Dihydroergotamine
11. Clidinium bromide belongs to which chemical class?
 - a) Amino alcohol esters
 - b) Amino amides
 - c) Amino alcohol ethers
 - d) Amino esters

12. Identify indirect acting parasympathomimetic agent:
- Acetylcholine
 - Carbachol
 - Bethanechol
 - Neostigmine
13. Chlorpromazine structure composed of which side chain?
- Propylamine side chain
 - Alkyl piperidiny side chain
 - Propyl piperaziny side chain
 - Propyl piperidine side chain
14. Benzodiazepines are:
- Ca channel blockers
 - GABA receptor agonists
 - NMDA receptor antagonists
 - NMDA agonists
15. Example of oxazolidinedione class of anticonvulsant drug is:
- Phenacemide
 - Ethotoin
 - Trimethadione
 - Primidone
16. Which of the following is mechanism of antipsychotic agents:
- Dopamine receptor antagonist
 - NMDA receptor antagonist
 - Chloride channel inhibition
 - COX inhibition
17. Which of the following is not a property of general anesthetics?
- Reversible loss of consciousness
 - Muscle relaxation
 - Analgesic effect
 - Addiction
18. Diclofenac belongs to chemical class of:
- Aryl acetic acid analogue
 - Aryl propionic acid analogue
 - N- anthranilic acid analogue
 - Salicylic acid analogue

19. The non-halogenated anesthetic agent is:
- Halothane
 - Methoxyflurane
 - Nitrous oxide
 - Enflurane
20. Which functional group is necessary to produce anti-inflammatory action?
- COOH group
 - OH group
 - CO group
 - CHO group

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- Write in detail about drug metabolism principles with examples.?
- Classify adrenergic antagonists with examples. Write the synthesis of propranolol (4+4+2) with mechanism of action and uses.
- Explain the SAR of parasympathomimetic agents. Write the synthesis, mechanism (4+4+2) of action and uses of carbachol.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5=35 Marks

- Explain the significance of ionization and partition coefficient of drugs in relation to its biological action.
- Write a note on adrenergic receptors and their distribution. Write the synthesis of tolazoline.
- Write a note on synthesis, mechanism of action and uses of dicyclomine hydrochloride.
- Write in detail on SAR of phenothiazines.
- Outline the synthesis, mechanism of action and uses of diazepam.
- Classify anticonvulsant agents with examples. Write the synthesis of carbamazepine.
- Write down the synthesis, mechanism of action and uses of methohexital sodium.
- Write a note on general anesthetics.
- Outline the synthesis and mechanism of action of mefenamic acid.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. The Tyndall effect is associated with:
 - a) True solutions
 - b) Suspensions
 - c) Colloidal dispersions
 - d) Emulsions
2. The movement of colloidal particles due to collision with solvent molecules is:
 - a) Brownian motion
 - b) Diffusion
 - c) Osmosis
 - d) Sedimentation
3. Which property of colloids is responsible for light scattering?
 - a) Optical property
 - b) Surface property
 - c) Kinetic property
 - d) Electrical property
4. The process of converting precipitate into colloidal form is called:
 - a) Flocculation
 - b) Coagulation
 - c) Dialysis
 - d) Peptization

5. A system that shows constant viscosity irrespective of shear rate is:
 - a) Newtonian system
 - b) Plastic system
 - c) Pseudoplastic system
 - d) Thixotropic system
6. The unit of viscosity is:
 - a) Pascal
 - b) Poise
 - c) Newton
 - d) Joule
7. Shear thickening behavior is observed in:
 - a) Plastic flow
 - b) Newtonian flow
 - c) Dilatant flow
 - d) Pseudoplastic flow
8. Thixotropy is defined as:
 - a) Increase in viscosity with time
 - b) Decrease in viscosity with time under constant shear
 - c) Constant viscosity
 - d) Irreversible gel formation
9. In flocculated suspensions:
 - a) Sedimentation is slow
 - b) Sediment is loosely packed
 - c) Cake formation occurs
 - d) Supernatant is turbid
10. According to Stokes' law, sedimentation rate is directly proportional to:
 - a) Square of particle radius
 - b) Viscosity
 - c) Density of medium
 - d) Temperature
11. An emulsion stabilized by surfactant follows:
 - a) Stoke's law
 - b) Raoult's law
 - c) Gibbs-Marangoni effect
 - d) Henry's law

12. Multiple emulsions are also called:
 - a) Macroemulsions
 - b) Double emulsions
 - c) Nanoemulsions
 - d) Microemulsions
13. The diameter of a sphere having same volume as particle is:
 - a) Martin diameter
 - b) Volume diameter
 - c) Feret diameter
 - d) Projected diameter
14. The property that affects flow of powders is:
 - a) Colour
 - b) Odour
 - c) Particle size
 - d) Taste
15. Porosity is defined as:
 - a) Weight/volume
 - b) Mass/density
 - c) Void volume/total volume
 - d) Surface area/volume
16. Angle of repose indicates:
 - a) Particle density
 - b) Surface area
 - c) Flow property of powder
 - d) Particle shape
17. The rate of zero order reaction is:
 - a) Proportional to concentration
 - b) Inversely proportional
 - c) Independent of concentration
 - d) Exponential
18. Half-life of first order reaction depends on:
 - a) Initial concentration
 - b) Rate constant
 - c) Temperature
 - d) Volume

19. Hydrolysis of drugs is influenced by:
- Colour
 - Odour
 - pH of medium
 - Shape
20. Accelerated stability testing is carried out to:
- Improve taste
 - Reduce cost
 - Predict shelf life
 - Increase viscosity

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain classification of colloidal dispersions and discuss their electrical properties in detail.
2. Describe different types of non-Newtonian flow systems with suitable examples and applications in pharmacy.
3. Discuss formulation and stability aspects of emulsions including different theories of emulsification.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5=35 Marks

4. Explain protective action and gold number.
5. Write a note on any one single point viscometer used in pharmaceutical industry.
6. Explain sedimentation volume and its significance.
7. Write a note on particle size distribution methods.
8. Explain bulk density and tapped density.
9. Discuss packing arrangements of powders.
10. Derive zero order reaction with example.
11. Write a note on physical factors affecting drug degradation.
12. Explain photolytic degradation and its prevention methods.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Fourth Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY.
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which of the following mechanisms of membrane transport involves the movement of molecules down their concentration gradient without energy expenditure?
 - a) Active transport
 - b) Facilitated diffusion
 - c) Endocytosis
 - d) Pinocytosis
2. Which of the following is an example of an enzyme inhibitor?
 - a) Phenytoin
 - b) Rifampicin
 - c) Grapefruit juice
 - d) Carbamazepine
3. What is the term for the condition where a patient needs progressively larger doses to achieve the same effect?
 - a) Addiction
 - b) Tolerance
 - c) Dependence
 - d) Allergy
4. A drug that activates a receptor to produce a biological response is called:
 - a) Agonist
 - b) Antagonist
 - c) Inhibitor
 - d) Enzyme

5. In which phase of clinical trials is the drug first tested for safety in humans?
 - a) Phase I
 - b) Phase II
 - c) Phase III
 - d) Phase IV
6. Pharmacovigilance is primarily concerned with:
 - a) Drug marketing
 - b) Monitoring drug safety post-approval
 - c) Preclinical animal testing
 - d) Drug pricing
7. Which term refers to the unintended, harmful effects of drugs administered at normal doses?
 - a) Pharmacokinetics
 - b) Adverse drug reactions
 - c) Tolerance
 - d) Addiction
8. The therapeutic index (TI) of a drug is defined as:
 - a) The ratio of the effective dose to the toxic dose
 - b) The ratio of the lethal dose to the effective dose
 - c) The difference between the minimum and maximum dose
 - d) The rate of drug absorption in the body
9. The drug of choice for the treatment of myasthenia gravis is:
 - a) Neostigmine
 - b) Atropine
 - c) Propranolol
 - d) Epinephrine
10. Which of the following is an amide-type local anesthetic?
 - a) Procaine
 - b) Lidocaine
 - c) Cocaine
 - d) Tetracaine
11. Which of the following is a depolarizing neuromuscular blocking agent?
 - a) Pancuronium
 - b) Succinylcholine
 - c) Tubocurarine
 - d) Vecuronium

12. Which of the following is part of the parasympathetic nervous system?
 - a) Acetylcholine as a neurotransmitter
 - b) Norepinephrine as a neurotransmitter
 - c) Skeletal muscle control
 - d) Fight or flight response
13. Disulfiram works by inhibiting:
 - a) Alcohol absorption in the stomach
 - b) The breakdown of acetaldehyde
 - c) Dopamine receptors
 - d) Alcohol dehydrogenase
14. Which of the following is a potential consequence of long-term alcohol abuse?
 - a) Hepatitis
 - b) Renal failure
 - c) Bronchitis
 - d) Arthritis
15. Which of the following is an adverse effect commonly associated with long-term use of phenytoin?
 - a) Hepatotoxicity
 - b) Gingival hyperplasia
 - c) Weight gain
 - d) Sedation
16. Dopamine deficiency in the CNS is most closely associated with:
 - a) Alzheimer's disease
 - b) Parkinson's disease
 - c) Epilepsy
 - d) Anxiety disorders
17. Modafinil, a CNS stimulant, is commonly used to treat:
 - a) Anxiety
 - b) Narcolepsy
 - c) Schizophrenia
 - d) Alzheimer's disease
18. Which neurotransmitter is primarily affected in Alzheimer's disease?
 - a) Dopamine
 - b) Serotonin
 - c) Acetylcholine
 - d) Glutamate

19. Lithium is primarily used in the treatment of:
 - a) Schizophrenia
 - b) Bipolar disorder
 - c) Generalized anxiety disorder
 - d) Alzheimer's disease
20. Which of the following is a synthetic opioid used for severe pain?
 - a) Ketamine
 - b) Fentanyl
 - c) Aspirin
 - d) Diazepam

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Describe the mechanisms of membrane transport of drugs and discuss the factors influencing drug absorption.
2. Describe the different types of receptors involved in signal transduction.
3. Classify and explain the mechanisms of action of sympathomimetic drugs. Provide examples and discuss their clinical applications.

Section C

SHORT NOTES (Answer any SEVEN questions)

7x5=35 Marks

4. Describe the different routes of drug administration and discuss the factors influencing the choice of route for a particular drug.
5. Explain the mechanisms of pharmacokinetic interactions with examples.
6. Discuss the pharmacology of drugs used to treat glaucoma.
7. Discuss the pharmacological effects of centrally acting muscle relaxants.
8. Classify general anaesthetics. Write a note on stages of anaesthesia.
9. Classify sedatives and hypnotics? Write the pharmacology of barbiturates.
10. What are the therapeutic uses of anti-manic drugs in the management of bipolar disorder?
11. Discuss the pharmacological approaches to treating Alzheimer's disease.
12. Classify opioid analgesics with example? Enlist side effects and contraindications of morphine.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2026

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 20 Marks

Section B: Long Essay 20 Marks

Section C: Short Essay 35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which type of head is measured using pitot tube?
 - a) Kinetic velocity head
 - b) Pressure head
 - c) Static velocity head
 - d) Total head
2. Bell crank liver arrangements is present in:
 - a) Cyclone separator
 - b) Bag filters
 - c) Elutriation tank
 - d) Air separator
3. Breaking down of the material by rubbing action between two surfaces is known as:
 - a) Cutting
 - b) Attrition
 - c) Compression
 - d) Impact
4. Thermolabile materials can be grinded by:
 - a) Fluid energy mill
 - b) Ball mill
 - c) Cutter mill
 - d) Hammer mill

5. Heat flow through space by means of electromagnetic waves is termed as:
 - a) Conduction
 - b) Convention
 - c) Radiation
 - d) Distillation
6. In vertical tube evaporator, the calandria is having:
 - a) 10 vertical tubes
 - b) 50 vertical tubes
 - c) 100 vertical tubes
 - d) 150 vertical tubes
7. Differential distillation is also known as:
 - a) Simple distillation
 - b) Flash distillation
 - c) Molecular distillation
 - d) Fractional distillation
8. Ideal solutions obey:
 - a) Dalton's law
 - b) Boyle's law
 - c) Raoult's law
 - d) Fick's law
9. The mechanism of mixing in Silverson mixer is:
 - a) Convective mixing
 - b) Laminar mixing
 - c) Molecular mixing
 - d) Turbulent mixing
10. Steam jacketed bowl in planetary mixer is used in the manufacturing of:
 - a) Tablets
 - b) Sustained release products and ointments
 - c) Injections
 - d) Capsules
11. Which is the example of solid liquid mixing?
 - a) Aluminum hydroxide gel
 - b) Complex elixir
 - c) Cod liver oil emulsion
 - d) Ephedrine syrup

12. The more soluble product can be obtained by using:
 - a) Tray dryer
 - b) Drum dryer
 - c) Vacuum dryer
 - d) Spray dryer
13. Impingement is the mechanism involved in:
 - a) Filtration
 - b) Centrifugation
 - c) Crystallization
 - d) Mixing
14. Applications of centrifugal force, results with varied rate of filtration:
 - a) Increases
 - b) Decreases
 - c) No effect
 - d) Constant
15. As the viscosity increases, the rate of filtration is:
 - a) High
 - b) Low
 - c) Medium
 - d) Very high
16. Centrifugation is useful in one of the following types of dispersions:
 - a) Course dispersion
 - b) Colloidal dispersion
 - c) Molecular dispersion
 - d) Multi-size dispersion
17. Which of the following is prone to cavitation erosion?
 - a) Tubes
 - b) Pipes
 - c) Propellers
 - d) Pumps
18. To prevent corrosion, oxide film is maintained by:
 - a) Nitrogen
 - b) Sodium chloride
 - c) Hydrogen
 - d) Oxygen

19. The type of rubber used for closures of freeze-dried product containers:
- a) Nitrile rubber
 - b) Neoprene rubber
 - c) Butyl rubber
 - d) Silicone rubber
20. The thermoplastic flexible materials, used in the fabrication of:
- a) Gears
 - b) Tanks
 - c) Fans
 - d) Valves

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- 1. Explain about hammer mill with a neat sketch.
- 2. Write about climbing film evaporator.
- 3. Explain principle, construction, working and uses of vacuum dryer.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- 4. Explain the modes of motion in size separation.
- 5. Write a note on distillation used for the preparation of water for injection.
- 6. Explain the principle and working of freeze dryer.
- 7. Write about the types of filtrations in pharmaceutical industries
- 8. Explain Darcy and Kozeny-Carman equation.
- 9. Demonstration on filtration centrifuge.
- 10. Explain structural and biological fluid corrosion.
- 11. Give a note on cathodic protection for corrosion.
- 12. Write about any four physical factors influencing material selection in industry.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Third Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. The father of microbiology is:
 - a) Louis Pasteur
 - b) Robert Koch
 - c) Antonie van Leeuwenhoek
 - d) Joseph Lister
2. Which of the following microorganisms would be smallest in size?
 - a) Bacteria
 - b) Fungi
 - c) Animal cell
 - d) Viruses
3. In which flagellar arrangement do bacteria have a single flagellum located at one end of the cell?
 - a) Monotrichous
 - b) Lophotrichous
 - c) Peritrichous
 - d) Amphitrichous
4. Streak plate technique is used for:
 - a) Preservation
 - b) Sterilization
 - c) Isolation of pure culture
 - d) Staining

5. Acid-fast staining is mainly used to identify:
 - a) *Staphylococcus*
 - b) *Escherichia coli*
 - c) *Mycobacterium*
 - d) *Streptococcus*
6. Which of the following is most employed method to sterilize glass wares in the laboratory?
 - a) Dry heat
 - b) Autoclave
 - c) Membrane filtration
 - d) Pasteurization
7. Biological indicators employed in evaluation of sterilization efficiency contain:
 - a) Vegetative bacterial cells
 - b) Viruses
 - c) Bacterial spores
 - d) Fungal hyphae
8. Which of the following is a feature of the gram-negative bacterial cell wall?
 - a) Teichoic acids
 - b) Presence of an outer membrane
 - c) Thick peptidoglycan layer
 - d) Mycolic acid
9. The rigid cell wall of fungi contains:
 - a) Peptidoglycan
 - b) Cellulose
 - c) Chitin
 - d) Lipopolysaccharide
10. Which of the following is NOT a characteristic of viruses?
 - a) They are non-cellular
 - b) They reproduce only inside a host cell
 - c) They respire and metabolize independently
 - d) They have either DNA or RNA as genetic material
11. Study of fungi is termed as
 - a) Phycology
 - b) Bacteriology
 - c) Protozoology
 - d) Mycology

12. Disinfectant phenol acts by:
 - a) Protein precipitation
 - b) Cell wall synthesis inhibition
 - c) DNA replication inhibition
 - d) Spore formation
13. The main purpose of an aseptic area is to:
 - a) Increase production
 - b) Prevent contamination
 - c) Improve packaging
 - d) Reduce cost
14. Clean room classification is based on:
 - a) Temperature
 - b) Humidity
 - c) Number of particles
 - d) Noise level
15. Microbiological assays are used to determine:
 - a) Chemical identity
 - b) Microbial count
 - c) Potency of antibiotics
 - d) Sterility
16. HEPA filter is known as
 - a) High Efficiency Performance Air filter
 - b) High Elution Particulate Air filter
 - c) High Elution Performance Action filter
 - d) High Efficiency Particulate Air filter
17. Microorganisms grow best when water activity (A_w) is
 - a) Low
 - b) High
 - c) Medium
 - d) Zero
18. Which microorganism commonly spoils liquid pharmaceutical preparations?
 - a) Viruses
 - b) Bacteria and fungi
 - c) Protozoa
 - d) Algae

19. Preservatives are added to pharmaceutical products to:
- Improve taste
 - Prevent microbial growth
 - Increase viscosity
 - Improve colour
20. Primary cell cultures are obtained directly from:
- Cell lines
 - Tumor cells
 - Microorganisms
 - Living tissues

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the bacterial growth curve with diagram. Describe the methods for quantitative measurement of bacterial growth (viable count).
2. Explain the principle, procedure, merits, demerits, and applications of hot-air oven in the sterilization process.
3. Explain the classification and mode of action of disinfectants with suitable examples.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Write a short note on electron microscopy.
5. Write a brief note on simple staining technique.
6. Explain the procedure involved in evaluation of bacteriostatic liquid disinfectant by cup-plate method.
7. Enlist the general methods used to validate HEPA filters. Explain the surface sampling methods used for clean rooms.
8. Write briefly about clean room classification.
9. Write a short note on microbiological assay of antibiotics.
10. Define microbial spoilage and mention any four types of spoilage in pharmaceutical products.
11. Write briefly on the applications of cell cultures in pharmaceutical industry.
12. Write a note on evaluation of microbial stability of formulations.

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Third Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Number of moles of a solute per liter of solution:
 - a) Molarity
 - b) Molality
 - c) Normality
 - d) Equivalency
2. Mole fraction of solute is the ratio of:
 - a) the number of moles of solute
 - b) the total number of moles of solute and solvent
 - c) the number of moles of solute and the total number of moles of solute and solvent
 - d) the number of moles of solvent minus number of moles of solute
3. At a specified temperature, maximal amount of solute that can dissolve in an amount of solvent is known as:
 - a) Solubility
 - b) Dissolution
 - c) Diffusion
 - d) Capacity
4. Additional or Extra solute will not dissolve in a:
 - a) saturated solution
 - b) dilute solution
 - c) concentrated solution
 - d) non aqueous solution

5. The existence of molecules in more than one solid modification is called:
 - a) Allotropy
 - b) Amorphism
 - c) Isomorphism
 - d) Polymorphism
6. The change of state from solid to directly into gas is known as:
 - a) Fusion
 - b) Boiling
 - c) Sublimation
 - d) Evaporation
7. The critical point of pure substance is:
 - a) the highest temperature and pressure for which liquid and vapour can coexist
 - b) the point at which unsaturated liquid and unsaturated vapour curves meet
 - c) the point where vapour pressure has its smallest possible value.
 - d) the lowest temperature and pressure for which liquid and vapour can coexist
8. Which of the following properties are not shared by crystalline solids and amorphous solids?
 - a) Definite shape
 - b) Definite volume
 - c) Incompressibility
 - d) Definite melting point
9. Span 40 is dissolved in paraffin oil. At slightly above the critical micelle concentration, the arrangement of span molecules is:
 - a) heads face the center of the micelle
 - b) laminar arrangement
 - c) tails face the air at the interface
 - d) tails face the center of the micelle
10. Near critical micelle concentration, micelles of the surfactant molecules assume the shape of:
 - a) cylindrical
 - b) layered
 - c) rod-shaped
 - d) spherical
11. At concentrations below cmc, the surfactant molecules remains:
 - a) above the surface water
 - b) at water-air interface
 - c) in the bulk of water
 - d) uniform in bulk and interface

12. Which is an example for cationic surfactant?
- a) benzalkonium chloride
 - b) polysorbate 80
 - c) sodium lauryl sulphate
 - d) sorbitan monooleate
13. Ethylenediamine tetraacetic acid (EDTA) is an example of ligand type:
- a) bidentate
 - b) hexadentate
 - c) tetradentate
 - d) unidentate
14. In pH titration method, 0.25 N sodium hydroxide solution is used to titrate the complex (glycine-cupric) solution. What is the reason?
- a) A complex is formed only under alkaline conditions
 - b) Complex does not form completely under acidic conditions
 - c) Concentration of ligand bound to metal ion can be obtained
 - d) Neutralization of amino acid, glycine, is essential
15. Protein binding-distribution of drugs:
- a) increases
 - b) decreases
 - c) does not affect
 - d) prevents
16. Iodine forms a complex when it is dissolved in an organic solvent. Identify the solvent:
- a) carbon tetrachloride
 - b) cyclohexane
 - c) hexane
 - d) toluene
17. Buffer solutions used.....:
- a) are strong acids
 - b) resist change in pH
 - c) decrease the pH of a solution
 - d) increase the pH of a solution
18. If the osmotic pressure of a solution is equal to the osmotic pressure of plasma, then it is:
- a) Isotonic solution
 - b) Isobaric solution
 - c) Hypotonic solution
 - d) Hypertonic solution

19. Buffer capacity is:
 - a) Measuring efficiency of buffer in resisting changes in pH
 - b) Measuring efficiency of buffer in increase in pH
 - c) Measuring efficiency of buffer in decrease in pH
 - d) None of the above
20. Acidity and alkalinity can be measured on a scale is:
 - a) HLB
 - b) pH
 - c) rector
 - d) PKa

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Define solubility and analyse the factors influencing the solubility of drugs with examples.
2. Define optical rotation. Discuss in detail working of polarimeter. (2+8)
3. Define adsorption isotherm. Explain Freundlich and Langmuir adsorption (2+8)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain critical solution temperature and mention their applications.
5. What are eutectic mixtures? Explain with examples.
6. Describe HLB scale for selection of surface active agents.
7. Define complex. Classify with example.
8. Enumerate different methods of analysis of complex. Explain solubility method of analysis.
9. Explain mechanism of formation of hexamine cobalt chloride ligand complex.
10. Write a note on buffer action and buffer capacity.
11. Define isotonic solutions. Explain the adjustment of tonicity by any one method.
12. Write a note on plasma protein drug binding.

JSS Academy of Higher Education & Research, Mysuru

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Third Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Nitration of benzene is carried out in the presence of:
 - a) Conc. Sulphuric acid
 - b) Conc. Hydrochloric acid
 - c) Conc. Acetic acid
 - d) Mixture of Conc. Nitric acid and Conc. Sulphuric acid
2. Benzene undergoes:
 - a) Nucleophilic substitution reactions
 - b) Electrophilic substitution reactions
 - c) Nucleophilic addition reactions
 - d) Electrophilic addition reactions
3. Chlorination of benzene in presence of ultraviolet light gives:
 - a) DDT
 - b) BHC
 - c) Saccharin
 - d) Chloramine
4. Which of the following substituents is meta directing group?
 - a) Hydroxyl (-OH)
 - b) Amino (-NH₂)
 - c) Nitro (-NO₂)
 - d) Phenyl (-C₆H₅)

5. Phenols are derivative of:
 - a) Alkanes
 - b) Alkenes
 - c) Alkynes
 - d) Benzene
6. Which of the following is more basic than aniline?
 - a) Benzylamine
 - b) P-nitroaniline
 - c) Triphenylamine
 - d) Diphenylamine
7. Aromatic amines are the derivatives of:
 - a) Propane
 - b) Ethane
 - c) Methane
 - d) Ammonia
8. Choose the correct order related to acidic strength:
 - a) Phenol > Water > Ethyl alcohol
 - b) Ethyl alcohol > Water > Phenol
 - c) Ethyl alcohol > Phenol > Water
 - d) Water > Phenol > Ethyl alcohol
9. Fats and oils on hydrolysis gives corresponding fatty acids and?
 - a) Glycol
 - b) Ester
 - c) Aldehyde
 - d) Glycerol
10. Which among the following is a measure of the volatile fatty acid residues present in a given fat or oil?
 - a) Acid value
 - b) Saponification value
 - c) Iodine value
 - d) Reichert Meissl value
11. Iodine value of non-drying oil is:
 - a) 85-105
 - b) 125-140
 - c) 150-170
 - d) Above 170

12. The process by which fats and oils become degraded and starting unpleasant odour is known as:
- Dring of oil
 - Rancidity
 - Saponification
 - Esterification
13. Anthracene on treated with sodium dichromate yields:
- 9,10-dihydro anthracene
 - 9-nitro anthracene
 - Anthraquinone
 - Maleic anhydride
14. Organic compound consists of methane where in two hydrogen atoms are replaced by phenyl groups are:
- Naphthalene
 - Anthracene
 - Diphenyl methane
 - Triphenyl methane
15. Phenanthrene is a fused polycyclic compound contains:
- Two benzene rings
 - Three benzene rings
 - Four benzene rings
 - Five benzene rings
16. Naphthalene when reduced with H_2 in the presence of platinum as catalyst yields:
- Dialin
 - Tetralin
 - Octahydro naphthalene
 - Decalin
17. Normal tetrahedral value is:
- $102^{\circ}28'$
 - $109^{\circ}28'$
 - $102^{\circ}48'$
 - $109^{\circ}48'$
18. According to Baeyers strain theory, which of the cycloalkane have highest stability:
- Cyclopropane
 - Cyclobutane
 - Cyclopentane
 - Cycloethane

19. Cyclobutane when reacted with bromine gives:
- 1,2-dibromo butane
 - 1,3-dibromo butane
 - 1,4-dibromo butane
 - 1,1-dibromo butane
20. Cycloalkanes has the same molecular formula as:
- Alkanes
 - Alkenes
 - Alkadienes
 - Alkynes

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain Friedel crafts alkylation and sulphonation of benzene with mechanism. Write a note on Huckel's rule and aromaticity of benzene. (5+5)
2. Explain briefly about basicity of aromatic amines and effect of substituents on basicity of aromatic amines. (5+5)
3. Explain various analytical constants of fats and oils and explain the significance and principle involved in their determination.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain the effect of substituents on orientation of mono substituted benzene towards electrophilic substitution reactions.
5. Write a note on qualitative tests for phenols.
6. Write a note on rancidity and drying of oil.
7. Haworth synthesis of naphthalene and anthracene.
8. Any five important reactions of phenanthrene.
9. Synthesis and reactions of diphenyl methane.
10. Explain Sachse Mohr theory.
11. Preparations of cycloalkanes.
12. Discuss the limitations of Baeyer's strain theory. Write any two reactions of cyclopropane.

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Second Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Metastatic calcification is characterized by:
 - a) Deposition of calcium salt in normal lung parenchyma
 - b) Deposition of sodium salt in normal lung parenchyma
 - c) Deposition of potassium in normal lung parenchyma
 - d) Deposition of chloride in normal lung parenchyma
2. Which of the following is FALSE with regard to acute inflammation?
 - a) Pavementing of leukocytes must occur.
 - b) The loss of protein from plasma reduces intravascular osmotic pressure.
 - c) Transmigration of leukocytes occurs as a result of pseudopod formation
 - d) Leukocyte diapedesis occurs predominantly in the venules:
3. Dolor means-
 - a) Redness
 - b) Swelling
 - c) Tumor
 - d) Pain
4. Which one of the following free radical causes cell death immediately?
 - a) Superoxide (O_2)
 - b) Hydrogen peroxide (H_2O_2)
 - c) Hydroxyl ($OH\cdot$)
 - d) Nitric oxide (NO)

5. Which one of the following are the causes of myocardial infarction?
 - a) Excessive smoking
 - b) Epilepsy
 - c) Non-steroidal anti-inflammatory drug abuse
 - d) Hypothyroidism
6. Which one of the following are the complication of hypertension?
 - a) Heart attack
 - b) Epilepsy
 - c) Asthma
 - d) Alcoholic liver disease
7. Which type of asthma occurs in late adult life?
 - a) Atopic asthma
 - b) Intrinsic asthma
 - c) Mixed asthma
 - d) Allergic asthma
8. In end stage kidney disease GFR is:
 - a) 15-29 ml/min
 - b) 30-59 ml/min
 - c) 60-89 ml/min
 - d) < 15 ml/min
9. Weight of hemoglobin in RBC is:
 - a) 50%
 - b) 70%
 - c) 90%
 - d) 99%
10. The pathognomonic abnormality is seen in β -thalassemia is:
 - a) Marked rise in HbA₂
 - b) Marked rise in HbF
 - c) Marked unconjugated hyperbilirubinemia
 - d) Marked anaemia
11. Which one of the following terms defines gestational diabetes?
 - a) Diabetes mellitus occurs in pregnancy
 - b) Diabetes mellitus occurs during lactation
 - c) Diabetes mellitus associated with kidney diseases
 - d) Diabetes mellitus alone

12. Which one of the following has high risk for hypothyroidism?
 - a) Diabetes mellitus
 - b) Chronic diseases
 - c) Previous head/ Neck/ Thyroid irradiation/Surgery
 - d) Kidney disease
13. Which one of the following is the transmits of Hepatitis A virus?
 - a) Contamination of food and water
 - b) Sexual intercourse with an infected partner
 - c) Tattooing with shared contaminated needles
 - d) Perinatal transmission from mother to child
14. Jaundice in acute cholecystitis can be classified under:
 - a) Congenital hyperbilirubinemia
 - b) Hemolytic
 - c) Hepatocellular
 - d) Obstructive
15. Which of the following conditions is considered an Inflammatory Bowel Disease (IBD)?
 - a) Irritable bowel syndrome
 - b) Gastroesophageal reflux disease
 - c) Crohn's disease
 - d) Celiac disease
16. Which of the following is NOT a risk factor for osteoporosis?
 - a) Ageing
 - b) Early menopause
 - c) Smoking
 - d) Diabetes mellitus
17. Which one of the following is the mode of transmission of typhoid?
 - a) Contamination of food and water
 - b) Sexual intercourse with an infected partner
 - c) Tattooing with shared contaminated needles
 - d) Perinatal transmission from mother to child
18. The window period b/w actual infection & production of detectable HIV antibodies occurs in?
 - a) Less than 1 week
 - b) 2-12 weeks
 - c) More than 15 weeks
 - d) More than 20 weeks

19. Leprosy is caused by:
 - a) *Mycobacterium tuberculosis*
 - b) *Mycobacterium leprae*
 - c) *Pseudomonas aeruginosa*
 - d) *Streptococcus aureus*
20. Which of the following is the least common microorganism isolated from urinary tract infections?
 - a) *Escherichia coli*
 - b) *Streptococcus pyogenes*
 - c) *Proteus vulgaris*
 - d) *Enterococcus faecalis*

Section B

LONG ESSAY (Answer any TWO questions)

2x10= 20 Marks

1. Explain the cellular & vascular event of acute inflammation. (5+5)
2. Define hypertension. Write about the pathogenesis of hypertension. (2+8)
3. Define diabetes mellitus. Explain pathogenesis of diabetes mellitus. (2+8)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Write the pathogenesis of irreversible cell injury.
5. Describe the pathophysiology of chronic renal failure.
6. Write the cause and pathogenesis of parkinsonism.
7. Write the ethanol metabolism & pathogenesises of alcoholic liver disease.
8. Explain sequential stages in chemical carcinogenesis.
9. Discuss about the pathogenesis rheumatoid arthritis.
10. With the clinical symptoms explain the pathogenesis of syphilis.
11. Explain the etiology, pathogenesis, signs and symptoms of leprosy.
12. Explain the etiology, pathogenesis, signs and symptoms of typhoid.

JSS Academy of Higher Education & Research, Mysuru

(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. The connective tissue layer that surrounds bundles of nerve fibers within a nerve called:
 - a) Epineurium
 - b) Perineurium
 - c) Endoneurium
 - d) Epimysium
2. The myelin sheath is essential for:
 - a) Transmitting nerve impulses more slowly
 - b) Insulating and speeding up nerve impulse conduction
 - c) Protecting nerves from physical injury
 - d) Regulating neurotransmitter release
3. CSF is found in which of the following spaces within the brain and spinal cord?
 - a) Subdural space
 - b) Subarachnoid space
 - c) Epidural space
 - d) Intraventricular space
4. Which phase of the action potential involves the return of the neuron's membrane potential to its resting state?
 - a) Depolarization
 - b) Repolarization
 - c) Hyperpolarization
 - d) Threshold potential

5. The specialized structures in the stomach which are responsible for grinding and mixing food with gastric juice is:
 - a) Cardia
 - b) Fundus
 - c) Pylorus
 - d) Antrum
6. What is the primary function of the gallbladder in the digestive system?
 - a) Production of bile
 - b) Storage and concentration of bile
 - c) Absorption of nutrients
 - d) Production of digestive enzymes
7. What is the pH range of normal gastric acid in the human stomach?
 - a) pH 1-2
 - b) pH 4-5
 - c) pH 7-8
 - d) pH 10-11
8. Under normal aerobic conditions, which process generates the majority of ATP in eukaryotic cells?
 - a) Glycolysis
 - b) Citric acid cycle (Krebs cycle)
 - c) Oxidative phosphorylation
 - d) Fermentation
9. The epiglottis is an integral part of the human respiratory system and is located in:
 - a) trachea
 - b) larynx
 - c) oral pharynx
 - d) nasal cavity
10. Type II alveolar epithelial cells play a crucial role in respiration by:
 - a) Providing structural support to the alveoli
 - b) Producing surfactant to reduce surface tension
 - c) Removing dust particles from the airway
 - d) Regulating blood flow in the capillaries
11. The structure connects the collecting ducts of multiple nephrons and is responsible for transporting urine to the renal pelvis is:
 - a) Glomerulus
 - b) Renal pyramids
 - c) Renal papilla
 - d) Renal calyx

12. The part of nephron does passive reabsorption of water without the use of energy (ATP) is:
 - a) Distal convoluted tubule
 - b) Proximal convoluted tubule
 - c) Loop of Henle
 - d) Collecting duct
13. Damage to the pituitary gland can result in a condition characterized by abnormal growth, known as:
 - a) Cushing's syndrome
 - b) Addison's disease
 - c) Graves' disease
 - d) Acromegaly
14. When blood calcium levels drop below the normal range, the parathyroid hormone?
 - a) inhibits calcium absorption in the intestine
 - b) stimulates calcium reabsorption in the kidneys
 - c) inhibits bone resorption
 - d) promotes phosphate retention in the body
15. An anterior pituitary hormone that is released into the bloodstream in response to stress is:
 - a) Oxytocin
 - b) Prolactin
 - c) Thyroid stimulating hormone
 - d) Adrenocorticotrophic hormone
16. Apart from stimulating T cell formation, the thymus hormone also helps grow B cells to produce antibodies is the:
 - a) Thymopoietin
 - b) Thymosin
 - c) Thymulin
 - d) Thyroxine
17. The optimal temperature required for sperm production in the human testes is
 - a) 37°C
 - b) 34-35°C
 - c) 38-39°C
 - d) 20-25°C
18. The medical term to refer the cessation of menstruation that occurs in women typically around the age of 45-55 is:
 - a) Ovulation
 - b) Menarche
 - c) Menopause
 - d) Menorrhagia

19. The layer of the uterus which undergoes cyclic changes during the menstrual cycle is:
- Perimetrium
 - Epimetrium
 - Myometrium
 - Endometrium
20. The term used to denote a change in the DNA sequence of a gene is:
- Mutation
 - Transcription
 - Replication
 - Translation

Section B

LONG ESSAY (Answer any TWO questions)

2x10= 20 Marks

1. Explain the fundamental principles of the electrophysiology of nerve fibers and the role of neurotransmitters in neuronal communication in the brain. (4+6)
2. Describe the anatomy of gastrointestinal system with a neat, labelled diagram. Explain the mechanism of acid production in stomach. (5+5)
3. Define respiration. Explain the mechanism of inhalation and exhalation with special emphasis on the role of key respiratory muscles. (2+5+3)

Section C

SHORT NOTES (Answer any SEVEN questions)

7x5= 35 Marks

4. Explain the role and significance of CSF in the central nervous system.
5. Enlist various digestive enzymes and write its location and functions.
6. Discuss the role of renin angiotensin aldosterone system (RAAS) in kidney.
7. Enlist the role of growth hormones in the human body.
8. Summarize the physiology of pancreas as an endocrine gland.
9. Explain the role of parathyroid hormone in maintaining calcium levels?
10. Add a short note on the steps involved in spermatogenesis.
11. Define parturition. Enlist the functions of various hormones involved in it.
12. What are the various patterns of genetic inheritance?

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(Deemed to be University)

Second Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. What is the condition necessary for functional isomerism to occur?
 - a) Same functional groups
 - b) Different functional groups
 - c) Same molecular formula
 - d) Different molecular formula
2. What is the primary goal of the IUPAC system of nomenclature?
 - a) To provide a simple name for each compound
 - b) To provide a name indicates the compound's properties
 - c) To provide a name that indicates the compound's structure
 - d) To provide a unique name for each compound
3. Suffix '-al' used in IUPAC nomenclature indicates:
 - a) Alcohol
 - b) Ketone
 - c) Aldehyde
 - d) Ester

4. What is the type of structural isomerism exhibited by 1-Propanol and 2-Propanol?
 - a) Chain isomerism
 - b) Functional isomerism
 - c) Position isomerism
 - d) Metamerism
5. Which is the general formula for alkanes?
 - a) C_nH_{2n+2}
 - b) C_nH_{2n}
 - c) C_nH_{2n-2}
 - d) C_nH_{2n-1}
6. What is the name of the reaction involving the addition of alkene to a diene to form an adduct?
 - a) Co-polymerisation
 - b) Aldol reaction
 - c) Diels Alder reaction
 - d) Polymerisation
7. Which reaction involves the addition of water to an alkene to form an alcohol?
 - a) Hydrolysis
 - b) Hydration
 - c) Dehydration
 - d) Halogenation
8. Which of the following is an example for saturated hydrocarbon?
 - a) Ethene
 - b) Ethyne
 - c) Ethane
 - d) Ethanol
9. What is the name of the reaction involving the elimination of hydrogen halide from an alkyl halide to form an alkene?
 - a) Dehalogenation
 - b) Dehydrohalogenation
 - c) Dehydration
 - d) Dehydrogenation
10. Which of the following is an example for tertiary alcohol?
 - a) CH_3-CH_2-OH
 - b) CH_3-OH
 - c) $(CH_3)_2CH-OH$
 - d) $(CH_3)_3C-OH$

11. Order of reactivity of alkyl halides in SN_1 reaction is:
- Primary>Secondary>Tertiary
 - Secondary>Tertiary>Primary
 - Tertiary>Secondary>Primary
 - Primary>Tertiary>Secondary
12. Oxidation of primary alcohol gives:
- Aldehydes
 - Ketones
 - Alkanes
 - Alkenes
13. What is the product of the reaction between an aldehyde and hydrogen cyanide (HCN)?
- Acetal
 - Enamine
 - Cyanohydrin
 - Imine
14. Which of the following is an example for ketone?
- $\text{CH}_3\text{-CHO}$
 - $\text{CH}_3\text{-CO-CH}_3$
 - $\text{CH}_3\text{-CH}_2\text{-OH}$
 - $\text{CH}_3\text{-COOH}$
15. Aldehydes which lack an α -hydrogen heated with NaOH is known as:
- Aldol condensation
 - Cannizzaro reaction
 - Benzoin condensation
 - Perkin condensation
16. A temporary polarization between atoms in a multiple bond in the presence of an attacking reagent:
- Electrometric effect
 - Resonance effect
 - Dipole moment
 - Polar effect
17. Acetyl salicylic acid is used as:
- Anti-malarial drug
 - Non-steroidal anti-inflammatory drug
 - Anti-convulsant drug
 - Anti-hypertensive drug

18. An organic compound derived from ammonia by replacement of one or more hydrogen atoms by organic groups are called:
- Amides
 - Esters
 - Amines
 - Ketones
19. Acidic hydrolysis of ester gives:
- Aliphatic amines and alcohol
 - Carboxylic acid and aldehyde
 - Carboxylic acid and ammonia
 - Carboxylic acid and alcohol
20. Number of carboxylic groups in citric acid is:
- One
 - Two
 - Three
 - Four

Section B

LONG ESSAY (Answer any TWO questions)

2 x 10= 20 Marks

- Classify organic compounds with examples. Give the IUPAC nomenclature rules for alkenes and alcohols. (4+3+3)
- Explain the mechanism of electrophilic addition reactions of alkenes with examples.
- Discuss SN_1 and SN_2 reactions with the help of suitable examples and discuss its mechanisms and kinetics.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Write a brief note on structural isomers in organic compounds.
- Explain the stability of conjugated dienes.
- Write the structure and uses of a) Glycerol b) Benzyl alcohol c) Chlorobutanol d) Chloroform e) Tetrachloroethylene.
- Explain briefly about nucleophilic addition reactions of carbonyl compounds.
- What is Cannizzaro reaction. Explain with mechanism.
- Explain Benzoin condensation with mechanism.
- Write a note on acidity of carboxylic acids.
- Explain the effect of substituents on basicity of aliphatic amines.
- Write the method of preparation of carboxylic acids.

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Second Semester B. Pharm (SS1) Examination – June 2026**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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Nucleic acid found in RNA but not in DNA is:
 - a) Adenine
 - b) Cytosine
 - c) Uracil
 - d) Guanine
2. Waxes are chemically:
 - a) Esters of fatty acid with glycerol
 - b) Esters of fatty acid with sterol/cetyl alcohol
 - c) Esters of fatty acid with amino alcohol
 - d) Esters of fatty acid with sphingosine
3. What are long chains of sugar called?
 - a) Monosaccharides
 - b) Disaccharides
 - c) Polysaccharides
 - d) Proteins
4. Oils & fats are composed of two groups of molecules:
 - a) Starch & Sugar
 - b) Glucose & Fructose
 - c) Fatty acids & Glycerol
 - d) Water & Cellulose

5. Polyurea can occur in:
 - a) Diabetes mellitus
 - b) Diarrhea
 - c) Acute glomerulonephritis
 - d) High fever
6. One of the following is not a hyperglycemic hormone:
 - a) Glucagon
 - b) Adrenaline
 - c) Thyroxine
 - d) Insulin
7. Pyruvate is initially converted to which of the following in gluconeogenesis?
 - a) Glycerol
 - b) Phosphonyl pyruvate
 - c) Oxaloacetate
 - d) Acetyl cot
8. How many ATPs are generated when glucose catabolized to pyruvate?
 - a) 2
 - b) 8
 - c) 10
 - d) 12
9. An example of non-protein amino acid:
 - a) Tryptophan
 - b) Tyrosine
 - c) Ornithine
 - d) Glutamate
10. A biologically important compound not derived from tyrosine amino acid:
 - a) Melanin
 - b) Dopamine
 - c) Adrenaline
 - d) Melatonin
11. Enzyme involved in the conversion of phenyl alanine to tyrosine:
 - a) Peroxidase
 - b) Hydroxylase
 - c) Decarboxylase
 - d) Oxidase

12. Which of the following is not a lipoprotein?
- a) LDL
 - b) HDL
 - c) Triglycerides
 - d) VLDL
13. Replication of DNA occurs in direction of:
- a) 4^1 to 3^1
 - b) 5^1 to 3^1
 - c) 3^1 to 5^1
 - d) 4^1 to 5^1
14. The most abundant RNA in cell is:
- a) t RNA
 - b) m RNA
 - c) r RNA
 - d) Sn RNA
15. The functional unit of the DNA that can be transmitted is called as:
- a) Genome
 - b) Gene
 - c) Codon
 - d) Template
16. Non-sense codons are present on:
- a) m RNA
 - b) t RNA
 - c) r RNA
 - d) DNA
17. Key & lock hypothesis of enzyme action was given by:
- a) Fischer
 - b) Koshland
 - c) Buchner
 - d) Kuhne
18. Urease is a:
- a) Lyase
 - b) Ligase
 - c) Isomerase
 - d) Hydrolase

19. The coenzyme involved in carboxylation reaction is:
- Thiamine pyrophosphate
 - Pyridoxal phosphate
 - Biotin
 - Tetrahydrofolate
20. Elevated levels of isoenzyme creatine phosphokinase 2 (CPK2) is observed in:
- Acute pancreatitis
 - Liver disease
 - Myocardial infarction
 - Obstructive jaundice

Section B

LONG ESSAY (Answer any TWO questions)

2x10= 20 Marks

1. Explain the classification and biological function of proteins.
2. Describe HMP pathway with its significance.
3. Explain the steps involved in beta oxidation of palmitic acid with energetic.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Write the structure and biological significance of ATP and cyclic AMP.
5. Write in brief about glycogen storage disease.
6. Explain in detail biological significance of cholesterol.
7. Describe in brief about different types of RNA.
8. Explain any two disorders of nucleic acid metabolism.
9. Write a note on IUB classification of enzymes with examples.
10. Write a note on therapeutic and diagnostic applications of enzymes.
11. What are enzymes? How do they work.
12. Enumerate the various applications of enzymes with examples.

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First Semester B. Pharm (SS1) - Examination – June 2026**Subject: Pharmaceutical 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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions**20 x 1 = 20 Marks**

1. Accuracy describes the closeness of to its true value.
 - a) Variation
 - b) Measured value
 - c) Observed value
 - d) Reproducibility
2. Number of gram equivalents of a solute present in 1000 ml of solution:
 - a) Formality
 - b) Molarity
 - c) Molality
 - d) Normality
3. Which acid is used in the limit test for sulphate?
 - a) Sulphuric acid
 - b) Nitric acid
 - c) Hydrochloric acid
 - d) Acetic acid
4. How will you prepare 1000 ml of 0.1 N sodium thiosulphate?
 - a) 24.8 g gms in 1000 ml
 - b) 53 gms in 1000 ml
 - c) 63 gms in 1000ml
 - d) 248 gms in 1000 ml

5. Which of the following is used as an indicator in the titration of a strong base and a weak acid?
 - a) Methyl orange
 - b) Phenolphthalein
 - c) Thymol blue
 - d) Methyl Red
6. Onium ion has more tendencies to/for:
 - a) accept proton
 - b) dissociation
 - c) association
 - d) donate proton
7. How will you prepare 500 ml of 1 N NaOH solution?
 - a) 20 g of sodium hydroxide in 500 ml of water
 - b) 40 g of sodium hydroxide in 500 ml of water
 - c) 53 g of sodium hydroxide in 500 ml of water
 - d) 63 g of sodium hydroxide in 500 ml of water
8. The quantity of perchloric acid (72%) required for the preparation 0.1 N perchloric acid:
 - a) 7.5 ml
 - b) 8.5 ml
 - c) 11.0 ml
 - d) 12.5 ml
9. Mordant Black II is an indicator used in:
 - a) Non-aqueous titration
 - b) Complexometric titration.
 - c) Precipitation titration
 - d) Neutralization titration
10. The indicator used in the Mohr's method is:
 - a) Methyl red
 - b) Potassium chromate
 - c) Eriochrome black II
 - d) Crystal violet
11. The indicator used in the Mohr's method is:
 - a) Methyl Red
 - b) Potassium chromate
 - c) Eriochrome black II
 - d) Crystal Violet

12. Complexometric titration is useful for the determination of:
- Chelating agent
 - Metal ions
 - Precipitant
 - Complexing agent
13. Iodimetric titration is:
- Redox titration
 - Non-aqueous titration
 - Amperometric titration
 - Back Titration
14. How will you prepare 0.1 N ceric ammonium sulphate:
- 68.26 gms + 50ml H_2SO_4 , make up to 1000 ml with water
 - 53.26 gms + 30ml H_2SO_4 , make up to 1000 ml with water
 - 73.26 gms + 30ml H_2SO_4 , make up to 1000 ml with water
 - 63.26 gms + 30ml H_2SO_4 make up to 1000 ml with water
15. Name the redox titration that does not require an indicator:
- Cerimetry
 - Permanganometry
 - Iodimetry
 - Iodometry
16. Which of the following enhances the solubility of iodine in aqueous?
- Potassium iodide
 - Potassium iodate
 - Sodium iodide
 - Silver Iodide
17. Current Voltage Curve is also known as:
- Polarogram
 - Histogram
 - Half wave potential
 - Migration current
18. Reference electrode stands for:
- Indicating changes in emf
 - Standard potential
 - Indicating changes in pH
 - Valency of ions

19. The electrode which can be used as both indicator and reference electrode:
- Saturated calomel electrode
 - Glass electrode
 - Silver – Silver electrode
 - Hydrogen electrode
20. Conductometric titration of a weak acid Vs strong base, the initial conductivity will be:
- High
 - Low
 - Medium
 - Nil

Section B

LONG ESSAY (Answer any TWO questions)

2x10=20 Marks

- What are the different types of errors. Explain various methods to minimize the errors.
- Give an account of the types of solvents used in non-aqueous titrations. Explain the principle involved in the acidimetric titration by non-aqueous methods.
- What are precipitation titrations? Give a detailed account of Mohr's method and Volhard's method.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Explain the terms primary standards and secondary standards with suitable examples.
- Explain the different types of acid-base titrations with the help of neutralization curves.
- With a suitable example, write the principle involved in a diazotization titration.
- Differentiate iodometry and iodimetry.
- Write the properties of redox indicators. Give examples.
- How will you prepare 500 ml of 0.1N potassium permanganate solution? Give its standardization.
- Write the construction, working and principle involved in the working of a glass electrode with neat, labeled diagram.
- Explain the construction and working of a dropping mercury electrode.
- Explain the principle behind the conductometric titration of a strong base with weak acid.

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First Semester B. Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. The 2nd edition of Indian Pharmacopoeia was published in the year:
 - a) 1950
 - b) 1955
 - c) 1966
 - d) 1985
2. Which of the following is biphasic dosage form?
 - a) Elixir
 - b) Linctus
 - c) Emulsion
 - d) Syrup
3. The best method to calculate accurate dose among the below methods is?
 - a) Age
 - b) Sex
 - c) Body Weight
 - d) Body Surface area
4. Posology means:
 - a) Dosage form
 - b) Drug delivery system
 - c) Pharmacokinetics
 - d) Quantity of drug

5. Isotonic solution of NaCl contain:
 - a) 0.009%w/v NaCl
 - b) 0.09%w/v NaCl
 - c) 0.99%w/v NaCl
 - d) 0.9%w/v NaCl
6. According to metric system 1 teaspoonful is equal to:
 - a) 4ml
 - b) 8ml
 - c) 15ml
 - d) 30ml
7. Medicated powders meant for introduction into the body cavities are called as:
 - a) Dentifrices
 - b) Simple powders
 - c) Surgical dusting powders
 - d) Insufflations
8. Which of the following is not a vehicle?
 - a) Glycerol
 - b) Water
 - c) Rose water
 - d) Butylated hydroxyl toluene
9. Syrups containing drug substances are called:
 - a) Flavoured syrup
 - b) Simple syrup
 - c) Syrup
 - d) Medicated syrup
10. Lugol's solution is:
 - a) Aqueous iodine solution
 - b) Weak iodine solution
 - c) Strong iodine solution
 - d) Alcoholic iodine solution
11. Controlled flocculation is achieved by:
 - a) Addition of flocculating agent
 - b) Addition of suspending agent
 - c) Addition of emulsifying agent
 - d) Addition of preservatives

12. Primary emulsion formula for volatile oil is:
- a) 4:3:1
 - b) 2:2:1
 - c) 4:2:1
 - d) 3:2:1
13. Suppository base is that it should remain _____ at room temperature.
- a) solid
 - b) liquid
 - c) gaseous
 - d) semi solid
14. Cocoa butter is a fat obtained from:
- a) stem of theobroma cocoa
 - b) roasted seed of theobroma cocoa
 - c) roasted leaves of theobroma cocoa
 - d) Flower of theobroma cocoa
15. compatibility may be corrected by changing the order of mixing.
- a) Delayed
 - b) Immediate
 - c) Tolerated
 - d) Adjusted
16. Therapeutic incompatibility may occur due to:
- a) Decrease in melting point
 - b) Precipitation of solute
 - c) Immiscibility of two solvents
 - d) Antagonist drugs
17. In the preparation of vanishing creams, which types of bases are used generally?
- a) Absorption bases
 - b) Water removable bases
 - c) Hydrocarbon bases
 - d) Emulsification bases
18. Which of the following is not a semisolid dosage form?
- a) Pastes
 - b) Creams
 - c) Ointments
 - d) Suspensions

19. _____ is an example of gelling agent.

- a) Pectin
- b) Propylene glycol
- c) Sorbitol
- d) Liquid Paraffin

20. Polyethylene glycols are also known as:

- a) Oleaginous
- b) Paraffin
- c) Macrogol
- d) Lanolin

Section B

LONG ESSAY (Answer any TWO questions)

2x10= 20 Marks

1. Define posology. Enumerate different factors affecting the selection of the dose of a drug. (1+9)
2. a) Explain simple and compound powders with an example. (5+5)
b) Discuss briefly solubility enhancement techniques.
3. Define suspension. Write its advantages, disadvantages and classification of suspensions. Differentiate flocculated and deflocculated suspension? (1+4+5)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

4. Define dosage form. Give a detailed classification of dosage forms.
5. Explain dusting powders with examples.
6. Differentiate lotions and liniments.
7. Define suppositories. Describe the various methods used for the preparations of suppositories.
8. Define incompatibility. Explain the chemical incompatibility with examples.
9. Explain the physical incompatibility with examples.
10. Write a note on selection criteria for ointment base.
11. Write a note on gelling agent.
12. Explain the factors influencing dermal penetration of drugs.

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(Deemed to be University)

First Semester B Pharm (SS1) Examination – June 2026

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

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. The maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes submit the OMR sheet to the Invigilator.

Multiple Choice Questions

20 x 1 = 20 Marks

1. Which is the correct sequence of the mitosis?
 - a) Metaphase, anaphase, telophase, prophase
 - b) Prophase, anaphase, metaphase, telophase
 - c) Prophase, metaphase, anaphase, telophase
 - d) Telophase, metaphase, prophase, anaphase
2. Which of the following processes occurs in the ribosomes of a cell?
 - a) DNA replication
 - b) Protein synthesis
 - c) Lipid metabolism
 - d) ATP production
3. During which phase of mitosis do the sister chromatids separate and move towards opposite poles of the cell?
 - a) Prophase
 - b) Metaphase
 - c) Anaphase
 - d) Telophase
4. Which type of cell junction allows the direct passage of ions and small molecules between adjacent cells?
 - a) Tight junctions
 - b) Desmosomes
 - c) Gap junctions
 - d) Adherens junctions

5. Which fibrous protein is responsible for the strength and water resistance of the skin surface?
 - a) Keratin
 - b) Elastin
 - c) Collagen
 - d) Fibrin
6. What is the primary function of the hypodermis?
 - a) To produce melanin
 - b) To form a protective barrier
 - c) To produce sweat
 - d) To provide insulation and cushioning
7. Which of the following is an example of a flat bone?
 - a) Femur
 - b) Scapula
 - c) Patella
 - d) Vertebra
8. Which of the following is a primary function of bones?
 - a) Blood cell formation
 - b) Vitamin D synthesis
 - c) Enzyme synthesis
 - d) Hormone production
9. What is the function of platelets in the blood?
 - a) To carry oxygen
 - b) To fight infections
 - c) To help in blood clotting
 - d) To transport nutrients
10. Which of the following is the most abundant protein in plasma?
 - a) Hemoglobin
 - b) Albumin
 - c) Fibrinogen
 - d) Globulin
11. Which organ is responsible for the production of erythropoietin?
 - a) Liver
 - b) Bone marrow
 - c) Spleen
 - d) Kidney

12. Which of the following is a primary lymphoid organ?
 - a) Thymus
 - b) Spleen
 - c) Lymph nodes
 - d) Tonsils
13. Which of the following is a characteristic of the parasympathetic nervous system?
 - a) Increases heart rate
 - b) Dilates pupils
 - c) Stimulates digestion
 - d) Inhibits salivation
14. Which division of the autonomic nervous system is responsible for the 'Rest and Digest' response?
 - a) Sympathetic nervous system
 - b) Central nervous system
 - c) Enteric nervous system
 - d) Parasympathetic nervous system
15. Which part of the eye dilates, and contracts based on the environment?
 - a) Sclera
 - b) Cornea
 - c) Lens
 - d) Pupil
16. Which is the innermost and most delicate layer of the eyeball where the photoreceptors are located?
 - a) Retina
 - b) Choroid
 - c) Sclera
 - d) Cornea
17. Where is the tricuspid valve located?
 - a) Between the left atrium and left ventricle
 - b) Between the right atrium and right ventricle
 - c) Between the right ventricle and pulmonary artery
 - d) Between the left ventricle and aorta
18. What is the function of the mitral valve?
 - a) Prevents backflow of blood into the left atrium
 - b) Prevents backflow of blood into the right atrium
 - c) Prevents backflow of blood into the right ventricle
 - d) Prevents backflow of blood into the left ventricle

19. What is the role of Purkinje fibers in the heart?
- To initiate the heartbeat
 - To delay the impulse
 - To conduct impulses to the ventricles
 - To contract the atria
20. Which of the following mechanisms is involved in the long-term regulation of blood pressure?
- Baroreceptor reflex
 - Renin-angiotensin-aldosterone system
 - Chemoreceptor reflex
 - Bainbridge reflex

Section B

LONG ESSAY (Answer any TWO questions)

2x10= 20 Marks

- Classify epithelial tissues. Explain the structure, location and functions of subtypes of epithelial tissues with labelled diagrams. (4+6)
- Classify the various joints based on structure and function. Discuss the structure and function of synovial joints. (5+5)
- Explain the process of blood coagulation and the role of clotting factors. (5+5)

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Discuss the different types of cell signaling mechanisms.
- Discuss the process of synaptic transmission at the neuromuscular junction.
- Define lymph. Write the composition and functions of lymph.
- Explain the origin and primary functions of the cranial nerves.
- Explain the structure and function of the human ear with a neat, labelled diagram.
- Classify peripheral nervous system. Write the functions of sympathetic nervous system.
- Draw a neat, labelled diagram of heart. List and define any four cardiovascular diseases.
- Explain the role of conduction system in regulating normal physiology of heart.
- Discuss the mechanisms involved in the regulation of blood pressure.

JSS Academy of Higher Education & Research, Mysuru

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Draw neat, labeled diagrams wherever necessary

Section A: Multiple Choice Questions

20 Marks

Section B: Long Essay

20 Marks

Section C: Short Essay

35 Marks

Section A

Note:

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Multiple Choice Questions

20 x 1 = 20 Marks

1. The 1st edition of Indian pharmacopoeia was released in the year:
 - a) 1947
 - b) 1955
 - c) 1966
 - d) 1985
2. I.P prescribes limits for arsenic should be not more than ppm.
 - a) 2
 - b) 8
 - c) 14
 - d) 20
3. In the barium sulphate reagent, which of the following prevents supersaturation of the solution:
 - a) Alcohol
 - b) Barium chloride
 - c) Potassium sulphate
 - d) Barium sulphate
4. In limit test for iron, ... is used to prevent the precipitation of iron by ammonia.
 - a) Thioglycolic acid
 - b) Ferric ammonium sulphate
 - c) Citric acid
 - d) Potassium chloride

5. is required for carbohydrate and protein metabolism.
- Magnesium
 - Calcium
 - Sodium
 - Potassium
6. According to Arrhenius theory base is a substance which give rise when dissolved in water.
- Hydroxyl ion
 - Hydronium ion
 - Hydride ion
 - Hydrogen ion
7. Outer layer of teeth made up of:
- Calcium carbonate
 - Calcium phosphate
 - Calcium sulphate
 - Calcium nitrate
8. The normal pH range of saliva is:
- 4.5-8.0
 - 6.2-7.6
 - 8.0-10.0
 - 7.2-7.8
9. Which of the following is used as acidifier?
- HCL
 - H_2SO_4
 - HNO_3
 - H_3PO_4
10. Which type of titration method is used for assay of chlorinated lime:
- Acid-base titration
 - Non aqueous titration
 - Complexometric titration
 - iodometric titration
11. Which antacid combination produces rapid onset with prolonged action?
- Aluminum hydroxide and calcium carbonate
 - Aluminum hydroxide and magnesium carbonate
 - Aluminum hydroxide and magnesium hydroxide
 - Aluminum hydroxide and magnesium trisilicate

12. Use of sodium ortho phosphate:
- a) Emetic
 - b) Expectorant
 - c) Antidote
 - d) Laxative
13. Sodium potassium tartarate is mainly used as:
- a) Emetic
 - b) Expectorant
 - c) Antidote
 - d) Laxative
14. Blue vitriol is:
- a) $\text{CuSO}_4, 7\text{H}_2\text{O}$
 - b) $\text{CuSO}_4, 5\text{H}_2\text{O}$
 - c) $\text{CuSO}_4, \text{H}_2\text{O}$
 - d) $\text{CuSO}_4, 3\text{H}_2\text{O}$
15. Which of the following antidotes are used in cyanide poisoning?
- a) Sodium potassium tartrate
 - b) Sodium thiosulphate
 - c) Sodium ortho phosphate
 - d) Sodium hydroxide
16. In the body, iron is stored in the form of:
- a) Transferrin
 - b) Ferritin
 - c) Haemosiderin
 - d) Ferritin and Haemosiderin
17. Alpha particles have a mass of:
- a) 1 amu
 - b) 2 amu
 - c) 4 amu
 - d) 6 amu
18. Unit of radioactivity:
- a) Curie
 - b) Roentgen
 - c) RAD
 - d) REM

19. Gold-198 used in the treatment of:
- Pernicious anaemia
 - Rheumatoid arthritis
 - Detection of tumors
 - Thyroid functioning
20. Which of the following is NOT type of gas filled detector:
- Ionization chamber
 - Proportional counter
 - Scintillation counter
 - Geiger-Müller counter

Section B

LONG ESSAY (Answer any TWO questions)

2 x 10= 20 Marks

- List out the factors for sources of impurities in pharmaceutical substances. (3+2+2+3)
 - Explain principle, reaction and procedure involved in Gutzeit test.
- Define and classify dental products. Explain the mechanism of action of fluoride in dental products. (3+3+4)
 - Explain about isotonic adjustment methods.
- Write a note on: a) Ideal requirements of antacids ii) Combination antacids. (3+3+4)
 - Write the preparation, properties, assay and uses of ammonium chloride.

Section C

SHORT ESSAY (Answer any SEVEN questions)

7x5= 35 Marks

- Write the principle and procedure involved in limit test for sulphates.
- Explain about the role of physiological buffers in the maintenance of acid base balance in the body.
- Write detailed mechanism of anti-microbial agents with examples.
- Define antidotes? Classify them, explain about cyanide poisoning mechanism of sodium nitrite
- What are haematinics? Write the preparation, properties and uses of ferrous sulfate.
- Write about the preparation, application and mechanism of potash alum.
- Discuss about half-life of radio isotopes and applications of sodium iodide-131.
- Enumerate the properties of alpha, beta and gamma rays.
- Explain any two radio activity measurement methods with neat diagram.
