P R E F A C E

Welcome to the world of **CUET (PG) Botany exam preparation!** This preface is designed to provide you with an overview of what to expect in this comprehensive resource for preparing for the CUET (Common University Entrance Test) Botany Postgraduate examination. It is our mission to help you succeed by offering a robust collection of previous year questions and practice questions along with detailed explanations.

Previous Year Questions: We have curated a vast collection of previous year CUET (PG) Botany questions. These questions are organized by topic and difficulty level to help you get a comprehensive understanding of what the examination expects.

Practice Questions: Along with the previous year questions, you'll find additional practice questions designed to strengthen your grasp of various botany topics. These questions are meant to challenge your knowledge and problem-solving skills.

Detailed Explanations: One of the most crucial aspects of this resource is the detailed explanations provided for each question. We understand that learning from your mistakes is crucial, and our explanations will help you understand not just the right answers but also the logic behind them.

Topic Coverage: This resource covers a wide range of topics in botany, including plant physiology, cell biology, genetics, taxonomy, ecology, and more. You'll have the opportunity to practice questions from all these areas to ensure a well-rounded preparation.

Progress Tracking: We recommend that you keep track of your progress as you work through this resource. This will help you identify your strengths and weaknesses and adjust your study plan accordingly.

We believe that with dedication, practice, and a thorough understanding of the subject, you can excel in the CUET (PG) Botany examination. Use this resource to your advantage, and best of luck in your preparation and the upcoming exam!

A C K N O W L E D G E M E N T

We would like to express our sincere gratitude to everyone who helped make this comprehensive compilation of answers to previous year's & practice questions CUET PG Botany entrance exam questions.

First and foremost, we would like to sincerely thank Mr. Radheshyam Choudhary, the founding CEO of IFAS Edutech Pvt. Ltd., for his unwavering encouragement, support, and insightful advice that have enabled us to turn our vision into a reality.

This book has become an invaluable tool for those aspiring to take the CUET PG Botany exam thanks in large part to your unwavering commitment to empowering students.

We extend our sincere gratitude to the distinguished instructors and subject matter experts, whose insight and understanding have been the foundation of our project. Their knowledge, direction, and unwavering quest of perfection have made this book an invaluable tool for those preparing for the CUET PG Botany. Our sincere appreciation is owed to Mr. Dadasaheb Sondge, Mr. Pranshu Dwivedi, Mr. Vishal Bhujbal, Mr. Lalji Kanojiya, Ms. Mamta Marar, Mr. Dipak Kumar and Mr. Yogesh Bishnoi. Your enthusiasm for teaching has spread to us, inspiring a love of study and a drive to learn more about the areas we value.

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We are incredibly appreciative to the students, whose passion and insatiable curiosity have served as a constant source of motivation. Your curiosity and commitment to study have inspired us to provide the most comprehensive answers to the difficult problems that CUET PG Botany exams present. Your confidence in our knowledge motivates us to keep aiming for educational excellence. We sincerely hope that this book serves as a reliable resource for you while you pursue knowledge and triumph. With sincere appreciation

Kailash Choudhary

Digambar Jagtap

About Common University Entrance Test CUET PG

Common University Entrance Test (CUET) is being introduced for admission into PG programmes in Central and participating Universities for academic sessions. The Common University Entrance Test (CUET) will provide a common platform and equal opportunities to candidates across the country, especially those from North- East and from rural and other remote areas and help to establish better connect with the Universities. A single Examination will enable the Candidates to cover a wide outreach and be part of the admissions process to various Central Universities. The CUET PG will be conducted in CBT mode in 02 shifts for admissions in the next academic session.

ELIGIBILITY AND QUALIFICATIONS

AGE LIMIT

For appearing in the CUET (PG) 2025, there is no age limit for the candidates.

As the eligibility criteria for admission may be unique for every University, the candidates are advised to visit the University website to which they are applying for their respective programs. Candidates are advised to satisfy themselves before applying that they possess the eligibility

MARKING SCHEME

Each question carries 04 (four) marks.

For each correct response, candidate will get 04 (four) marks.

For each incorrect response, 01 (one) mark will be deducted from the total score.

Un-answered/un-attempted response will be given no marks.

To answer a question, the candidate needs to choose one option as correct option.

However, after the process of Challenges of the Answer Key, in case there are multiple correct options or change in key, only those candidates who have attempted it correctly as per the revised Final Answer Key will be awarded marks.

In case a Question is dropped due to some technical error, full marks shall be given to all the candidates irrespective of the fact who have attempted it or not. *Examination will be conducted on multiple days in two shifts per day schedule and date sheet will be available on the website. Keep viewing it for updates.

S Y L L A B U S

1. PHYCOLOGY & MICROBIOLOGY:

1. Viruses & Other Acellular Agents, (Prions, Viriods & Virusoid & Viral Infection
2. The Microbes
3. Microbial Growth, Morphology & Physiology of Microorganism Gram Staining & Other Staining Method
4. Microbes & Diseases
5. Applied Microbiology & Industrial Microbiology Fermentation Antibiotics

2. BIOMOLECULES & CELL BIOLOGY:

- **BIOMOLECULES:-**
  1. Acid, PH, Buffer & Solution
  2. Thermodynamics, Molecular Bonds
  3. Amino Acid, Proteins
  4. Carbohydrate & Glycobiology, Metabolism
  5. Lipids
  6. Nucleotide & Nuclic Acid
  7. Enzyme & Vitamins

- **Cell Biology:-**
  1. Plasma Membrane, Membrane Transport
  2. Protein Sorting
  3. Cell Organeles
  4. Genome Organization & Cytoskelton
  5. The Cell Cycle
  6. Mitosis & Meosis
  7. Cell - Cell & Cell- Matrix Interaction
  8. Cancer

3. MYCOLOGY & PHYTOPATHOLOGY:

4. ARCHEGONIATE:

1. Bryophytes
2. Pteridophytes
3. Gymnosperm

5. ANATOMY & ANGIOSPERMS:

6. ECONOMIC BOTANY:

1. Origin of Crop Plants / Plant Breeding / Crop Improvement Method
2. Economic Botany

7. GENETICS:

1. Mendelian Genetics
2. Multiple Alleles
3. Gene Interaction
4. Sex Linked Inheritance, Genome Imprinting, Material Influence
5. Pedigree Analysis, Human Genetic Disorders
6. Polygenic Inheritance
7. Linkage
8. Transformation, Conjugation, Transduction & Mapping of Gene
9. Point Mutation & Transposable Element

8. MOLECULAR BIOLOGY:

1. Replication
2. DNA Damage & Repair
3. Transcription & RNA Splicing - Pro And Eukaryotic
4. Translation - Pro & Eukaryotic
5. The Genetic Code
6. Prokaryotic Regulation
7. Eukaryotic Regulation

9. PLANT ECOLOGY & PHYTOGEOGRAPHY:

1. Population Ecology
2. Ecological Succession
3. Biodiversity, Pollution Waste Management & Climate Change
4. Ecosystem Structure & Function
5. Major Terrestrial Biome & Island Biogeography
6. Species Interaction & Competition
7. Herbivory, Can Ivory & Pollination

10. PLANT SEMANTICS:

11. REPRODUCTIVE BIOLOGY OF ANGIOSPERMS:

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2. Male Sporogenesis & Gametogenesis
3. Female Gametogenesis
4. Pollination
5. Fertilization
6. Embryo Development

12. PLANT PHYSIOLOGY:

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2. Photosysnthesis C3, C2, C4, and CAM
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4. Water Balance of Plant, Mineral Nutrition & Solute Transport
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6. Plant Hormone
7. Stress Physiology, Secondary Metabolites

13. PLANT METABOLISM:

14. PLANT BIOTECHNOLOGY:

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3. Microscopy
4. Techniques of Molecular Biology, Bioinformatics, & Basic Techniques
5. Recombinant DNA & Genetics Analysis
6. Spectroscopic Techniques
7. Chromatography Techniques
8. Radioactivity

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NUMBER OF QUESTION ASKED IN CUET-PG BOTANY (2022 to 2024)				
Microbiology		**2022**	**2023**	**2024**
1	VIRUSES & OTHER ACELLULAR AGENTS, (PRIONS, VIROIDS & VIRUSOID) & VIRAL INFECTION	-	-	-
2	THE MICROBES	4	-	-
3	MICROBIAL GROWTH	-	2	2
4	MICROBES & DISEASE	-	-	1
5	APPLIED MICROBIOLOGY & INDUSTRIAL MICROBIOLOGY	1	-	6
Phycology		**2022**	**2023**	**2024**
1	Phycology	2	4	-

CHAPTER-1
MICROBIOLOGY

VIRUSES & OTHER ACELLULAR AGENTS

PRACTICE QUESTIONS

1. Which of the following statements is not true of viruses?
   (1) Viruses have been successfully grown in pure cultures in test tubes
   (2) All viruses are obligatory intracellular parasites
   (3) All viruses have either DNA or RNA as their genetic material
   (4) Viruses probably arose from small fragments of cellular chromosomes

2. When a virus enters a cell but does not replicate immediately, the phenomenon is called as:
   (1) Heliotism (2) Symbiosis
   (3) Lysogenry (4) Synergism

3. For a virus to replicate in host cell:
   (1) The host cell must be undergoing mitosis
   (2) Its genome must be released in the host cytoplasm
   (3) The host cell must lack a cell membrane
   (4) The capsid subunits should enter the host cell Cytoplasm

4. The genetic material of Tobacco Mosaic Virus is a:
   (1) dsDNA (2) ssRNA
   (3) ssDNA (4) dsRNA

5. The smallest known virus is:
   (1) Escherichia coli
   (2) Vaccinia virus
   (3) Tobacco mosaic virus
   (4) Tobacco necrosis sat

6. A common outcome of infection by plant viruses like TMV is likely to be:
   (1) Reduced synthesis of polyadenylated RNA in infected cells
   (2) Altered size distribution on polyadenylated RNA in infected cells
   (3) Reduced production of RUBISCO in infected cells
   (4) Reduced accumulation of viral capsid proteins in infected cells

7. Viroids contain:
   (1) Protein only (2) DNA only
   (3) RNA only (4) Protein and DNA

8. Prions (or the smallest disease causing agent) is consisted of:
   (1) Proteins only (2) Nucleic acid only
   (3) Lipids only (4) Cellulose only

9. Subunit of coat of virus is:
   (1) Nucleosome (2) Capsomere
   (3) Nucleotide (4) None of these

10. Viroids, infectious agents are:
    (1) Single stranded RNA molecule
    (2) Single stranded DNA molecule
    (3) Double stranded RNA molecule
    (4) cDNA

11. DNA is single-stranded in:
    (1) Eukaryotes (2) Prokaryotes
    (3) Viruses (4) φ×174

12. Which of the following is the largest virus?
    (1) Pox-virus (2) Bacteriophage
    (3) TMV (4) Cyanophage

13. Genetic material of adenovirus is of:
    (1) ssDNA (2) ssRNA
    (3) dsDNA (4) dsRNA

14. Which statement is not correct about viruses?
    (1) All viruses have a nucleocapsid
    (2) Viruses contain its own protein synthesis machinery
    (3) Viruses are simple, acellular entities
    (4) Viruses cannot survive without living host

15. Tobacco mosaic virus was first obtained in crystalline form by:
    (1) D. Iwanowski (2) F. Twort
    (3) W. Stanley (4) M. Beijerinck

16. Genome of HIV is:
(1) ss DNA (2) ss RNA
(3) ds DNA (4) ds RNA

17. A T-series bacteriophage can be recognized by its:
(1) Tadpole shape (2) Rounded shape
(3) Irregular shape (4) Rhomboidal shape

18. Bacteriophage that lyse the bacterial cell shortly after infection are termed as:
(1) Systemic (2) Virulent
(3) Immune (4) Temperate

19. Which one of the following is known for retroviruses?
(1) Howard Temin (2) Adolf Mayer
(3) D. Iwanowski (4) W. Stanley

20. Cyanophages were discovered by:
(1) Sinden
(2) Diener
(3) R. N. Singh
(4) Safferman and Morris

ANSWER KEY									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	3	2	2	4	3	3	1	2	1
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
4	1	3	2	3	2	1	2	1	4

EXPLANATIONS

[PRACTICE QUESTIONS]

1. **Correct Answer is (1):** Viruses cannot be grown in pure cultures in test tubes because they require a living host cell to replicate. They are obligate intracellular parasites, meaning they need a host cell to reproduce and cannot replicate on their own in a test tube.

2. **Correct Answer is (3):** Lysogeny is a phenomenon in which a virus integrates its genetic material into the host cell & # 39; s genome without causing immediate replication. The viral genome is replicated along with the host cell & # 39; s genome during cell division, and the virus can become active and start replicating at a later time.

3. **Correct Answer is (2):** In order for a virus to replicate in a host cell, its genetic material (genome) must be released into the host cell's cytoplasm, where it can then utilize the host cell's machinery to replicate and produce new virus particles.

4. **Correct Answer is (2):** Tobacco Mosaic Virus (TMV) has single-stranded RNA (ssRNA) as its genetic material. TMV is a plant virus with a helical capsid structure containing the single-stranded RNA genome.

5. **Correct Answer is (4):** Tobacco necrosis satellite is a small plant virus and is one of the smallest viruses known. It is often associated with the Tobacco necrosis virus (TNV) and is classified as a satellite virus due to its dependence on a helper virus like TNV for replication and movement within the host.

6. **Correct Answer is (3):** TMV infection can cause a variety of symptoms in tobacco plants, including mosaic patterns on the leaves, stunting, and reduced yield. One of the main ways that TMV causes these symptoms is by reducing the production of RUBISCO. RUBISCO, or ribulose-1, 5-bisphosphate carboxylase/oxygenase, is an enzyme that is essential for photosynthesis. It catalyzes the first step in the Calvin cycle, which is the process by which plants convert carbon dioxide from the atmosphere into sugar. When TMV infects a plant cell, it replicates rapidly and uses the cell's resources to produce new virus particles. This competition for resources can lead to a decrease in the production of other important proteins, such as RUBISCO.

7. **Correct Answer is (3):** Viroids are small infectious RNA particles that do not have a protein coat. They consist solely of RNA and do not contain DNA or Proteins.

8. **Correct Answer is (1):** Prions are infectious proteins that can cause various neurodegenerative diseases in animals and humans.

9. **Correct Answer is (2):** The subunit of the coat (capsid) of a virus is called a capsomere. Capsomeres are repeating protein subunits that make up the viral capsid.

10. **Correct Answer is (1):** Viroids are infectious agents composed of a single-stranded RNA molecule.

11. **Correct Answer is (4):** φ×174 is a bacteriophage whose genome is a single-stranded DNA. Most DNA viruses, as well as the DNA in eukaryotic cells and most prokaryotes, are double-stranded.

12. **Correct Answer is (1):** Among the options given, poxviruses (such as smallpox virus) are considered the largest and most complex viruses. They have a relatively large size and a complex structure compared to other viruses like bacteriophages, TMV, and Cyanophages.

13. **Correct Answer is (3):** Adenovirus, which causes respiratory and other infections in humans, contains double-stranded DNA as its genetic material.

14. **Correct Answer is (2):** Viruses lack their own protein synthesis machinery and metabolic processes necessary for energy production. Instead, they rely on the cellular machinery of a host organism to replicate and produce proteins. Upon infecting a host cell, a virus utilizes the host cell's ribosomes, enzymes, and other cellular components to carry out viral replication and protein synthesis.

15. **Correct Answer is (3):** Wendell Meredith Stanley was the scientist who first obtained the Tobacco mosaic virus in a crystalline form, which helped in understanding its structure and properties.

16. **Correct Answer is (2):** The genome of the Human Immunodeficiency Virus (HIV) is composed of single-stranded RNA.

17. **Correct Answer is (1):** T-series bacteriophages are often recognized by their tadpole-like shape, with a head and a tail.

18. **Correct Answer is (2):** Virulent bacteriophages are those that replicate inside the host bacterium and cause the host cell to lyse, releasing new phage particles.

19. **Correct Answer is (1):** Howard Temin, along with David Baltimore, made significant contributions to understanding retroviruses. Temin shared the Nobel Prize in Physiology or Medicine in 1975 for the discovery of reverse transcriptase, an enzyme involved in the replication of retroviruses.

20. **Correct Answer is (4):** Cyanophages, which infect cyanobacteria, were discovered by Safferman and Morris.