



অসম লোকসেৱা আয়োগ

ASSAM PUBLIC SERVICE COMMISSION

Jawaharnagar, Khanapara, Guwahati-781022.

SYLLABUS

Screening Test/written test for recruitment to the post of **Soil Conservation Ranger in Soil Conservation Department, Assam**
(ADVT. NO 25/2025 dated Guwahati the 4th July, 2025)

Paper-I

SUBJECT : GENERAL KNOWLEDGE

(Multiple Choice Question)

Marks - 100

Time- 2 HRS

TOPICS

1. **Current Events:** National, international, and state-level developments policies, Government schemes, latest events through newspapers and reports, International relations and socio-economic issues.
2. **World Geography:** India & Assam, Resources and environmental changes, landforms, physical and political geography, climate, Assam's rivers, forests, and biodiversity.
3. **Constitution of India:** Fundamental rights and duties, emergency provisions and roles of different branches of government, constitutional amendments, governance structure and legal provisions.
4. **History of the World, India, and Assam:** Major historical events, independence movements and regional developments, medieval kingdoms, ancient civilizations, freedom struggles and Assam's cultural heritage.
5. **Science & Technology:** Agricultural innovations, technology influences daily life and national progress, space missions and government research programs.

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Paper- II

SUBJECT: GENERAL ENGLISH

(Conventional Type)

Marks – 100

Time- 3 HRS

TOPICS

1. **Grammar:** This includes understanding and applying grammatical rules, sentence construction, parts of speech, and verb tenses.
2. **Vocabulary:** Candidates should have a good understanding of a wide range of words and their meanings.
3. **Synonyms/Antonyms:** Identifying words with similar and opposite meanings.
4. **Cloze Test:** Filling in missing words in a passage to test vocabulary and comprehension.
5. **Idioms and Phrases:** Understanding and using common idiomatic expressions.
6. **Fill in the Blanks:** Testing vocabulary and grammar through sentence completion.
7. **Error Spotting:** Identifying grammatical or usage errors in sentences.
8. **Comprehension Passages:** Reading and understanding unseen passages and answering related questions.
9. **One-Word Substitution:** Replacing a phrase or clause with a single word.
10. **Essay Writing:** Writing a well-structured and coherent essay on a given topic.
11. **Précis Writing:** Summarizing a passage concisely while retaining the essential points.
12. **Comprehension and Expression:** Demonstrating the ability to understand and express ideas clearly and accurately.
13. **Correction of Common Errors:** Identifying and correcting errors in writing.

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Paper-III/IV

OPTIONAL SUBJECT : AGRICULTURE
(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS

The Agriculture syllabus is based on the B.Sc. Agriculture Standard:

- 1) **Agronomy and Horticulture:** Crop rotation, Pest control, Organic farming, etc.
- 2) **Agricultural Economics and Extension Education:** Market structures, Pricing policies, Rural development programs, etc.
- 3) **Plant Pathology and Entomology:** Plant diseases, Pest management and biological control methods, understanding disease symptoms, etc.
- 4) **Animal Husbandry and Dairy Science:** Livestock management, Poultry farming, Breeding techniques and dairy production, etc.
- 5) **Soil and Water Conservation Engineering:** Water resource management, Irrigation, Erosion control, etc.

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OPTIONAL SUBJECT : AGRICULTURE ENGINEERING

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

I. Soil and Water Conservation Engineering:

This includes understanding soil properties, erosion control, water management techniques (irrigation, drainage), and watershed management.

II. Farm Machinery:

This covers the design, operation, and maintenance of agricultural machinery, including tractors, harvesters, and other implements.

III. Agricultural Structures:

This involves the design and construction of farm buildings, storage structures, and other facilities related to agriculture.

IV. Irrigation Engineering:

This encompasses the design and construction of irrigation systems, including canals, dams, and water distribution networks.

V. Engineering Mathematics: This provides the mathematical foundation for solving engineering problems, including calculus, differential equations, and linear algebra.

VI. Surveying: This involves techniques for determining the position of points on the Earth's surface, essential for planning and executing agricultural projects.

VII. Soil Mechanics:

This deals with the properties and behavior of soils, which is crucial for foundation design and other civil engineering aspects of agricultural infrastructure.

VIII. Hydraulics:

This focuses on the mechanics of fluids, particularly water, which is essential for understanding irrigation systems and water management.

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Paper-III/IV

OPTIONAL SUBJECT : HORTICULTURE

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- Fruits and Vegetables: Cultivation practices, including climatic requirements, planting systems, canopy management, nutrient and water management, and post-harvest handling.
- Plant Protection: Understanding diseases and pests of field, vegetable, orchard, and plantation crops, including their causes, classification, and control measures.
- Soil Science: Soil health, fertility, and management for optimal crop production.
- Agricultural Economics and Extension: Understanding rural development programs, farm management principles, and the role of agricultural extension in farmer empowerment.
- Horticultural Products: Processing techniques, packaging, and marketing of fruits and vegetables.
- Modern Concepts: Including plant regulators, enzymes, photosynthesis, and their impact on agricultural practices.
- Landscaping and Floriculture: Principles of landscape design, cultivation of ornamental plants, and the establishment of lawns and gardens.
- Specific Crops: Cultivation practices for major fruit and vegetable crops grown in India, with a focus on Assam's context.
- Pest and Disease Management: Integrated pest management, biological control, and pesticide application.
- Ornamental Horticulture
- Biotechnology of horticultural crops
- Medicinal and aromatic crops
- Microbiology
- Agriculture and horticulture
- Fruit science/pomology
- Fundamentals of Horticulture
- Mycology
- Post-harvest technology of horticultural crops
- Principles of plant breeding

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Paper-III/IV

OPTIONAL SUBJECT : BOTANY

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- | | |
|------------------------|---|
| I. Cell Biology: | <ul style="list-style-type: none">Cell Structure and Function: Detailed study of cell organelles (chloroplasts, mitochondria, ribosomes, etc.), cytoskeleton, cell signalling, and cell receptors.Cell Division: Mitosis and meiosis, covering the basics of the cell cycle and genetics. |
| II. Genetics: | <ul style="list-style-type: none">Mendelian and Post-Mendelian Genetics: Mendel's laws, linkage, crossing over, and the chromosome theory of heredity.Molecular Genetics: Mutation, sex determination, and sex-linked inheritance.Quantitative Genetics: Understanding gene behaviour in populations. |
| III. Plant Physiology: | <ul style="list-style-type: none">Basic Processes: Photosynthesis, respiration, and plant growth and development.Plant Hormones: Their roles and effects on plant growth and development.Environmental Physiology: How plants respond to various environmental conditions. |
| IV. Ecology: | <ul style="list-style-type: none">Basic Concepts: Ecosystems, ecological factors, and plant communities.Plant Succession: Understanding how plant communities change over time.Phytogeography: Focus on the plant distribution in India and Assam. |
| V. Plant Breeding: | <ul style="list-style-type: none">Principles and Methods: Polyploidy, mutation breeding, and various breeding techniques. |
| VI. Evolution: | <ul style="list-style-type: none">General Concepts: Theories of evolution and evidences of evolution. |
| VII. Economic Botany: | <ul style="list-style-type: none">Cultivation and Uses: Detailed study of economically important plants, including cereals, legumes, oilseeds, fibers, beverages, sugar sources, and medicinal plants. |

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Paper-III/IV

OPTIONAL SUBJECT : CHEMISTRY

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- **Inorganic Chemistry:** This area delves into the study of inorganic compounds, including their structure bonding, and properties. Expect to see topics like coordination chemistry, organometallic chemistry, solid-state chemistry, and bioinorganic chemistry
- **Organic Chemistry:** Advanced organic chemistry covers topics like reaction mechanisms, stereochemistry, synthesis of complex molecules, and spectroscopic analysis
- **Physical Chemistry:** This focuses on the theoretical and experimental aspects of chemistry, including thermodynamics, kinetics, quantum mechanics, and spectroscopy. You'll likely encounter advanced concepts like statistical mechanics and surface chemistry.
- **Analytical Chemistry:** Analytical chemistry involves the study of methods for identifying and quantifying chemical substances. Expect to explore advanced techniques like chromatography, spectroscopy, electrochemistry, and mass spectrometry

SPECIALIZATIONS:

- **Materials Chemistry:** This specialization focuses on the synthesis, characterization, and properties of new materials, including nanomaterials, polymers, and advanced ceramics
- **Biochemistry:** This area explores the chemical processes within living organisms, including the structure and function of biomolecules like proteins, nucleic acids, and carbohydrates.
- **Computational Chemistry:** This specialization uses computer modelling and simulation to study chemical systems, including drug design, molecular dynamics, and quantum chemistry calculations.


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Paper-III/IV

OPTIONAL SUBJECT : PHYSICS

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- I. **Quantum Mechanics:** Advanced concepts like perturbation theory, scattering theory, and quantum field theory are often included.
- II. **Classical Mechanics:** This includes Lagrangian and Hamiltonian formulations, as well as topics like rigid body dynamics and continuum mechanics
- III. **Electromagnetism:** Advanced study of electromagnetic fields and waves, including relativistic formulations.
- IV. **Statistical Mechanics:** Covers ensembles, phase transitions, and applications to various physical systems.
- V. **Mathematical Physics:** This encompasses techniques like complex analysis, linear algebra, group theory, and differential equations, which are essential for solving physics problems.
- VI. **Possible Specializations and Electives: Condensed Matter Physics:** Deals with the properties of solids and liquids including electronic structure, magnetism, and superconductivity.
- VII. **Particle Physics:** Focuses on the fundamental constituents of matter and their interactions.
- VIII. **Astrophysics:** Explores the physics of stars, galaxies, and the universe.
- IX. **Nuclear Physics:** Studies the structure and properties of atomic nuclei.
- X. **Atomic, Molecular, and Optical Physics:** Focuses on the interactions of light and matter at the atomic and molecular level

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Paper-III/IV

OPTIONAL SUBJECT : GEOLOGY

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- **Geochemistry:** This field explores the chemical composition of the Earth and its processes, including the distribution of elements and their cycles.
- **Geophysics:** Students learn about the physics of the Earth, including its gravity, magnetism, and seismic waves.
- **Economic Geology:** This area focuses on the geological aspects of mineral and energy resources.
- **Hydrogeology:** This field examines groundwater, its occurrence, movement, and use.
- **Environmental Geology:** This area applies geological principles to address environmental issues.
- I. **Physical Geology:** This foundational area explores the Earth's physical characteristics, including its structure (layers, plate tectonics), processes (volcanism, earthquakes, weathering, erosion, sedimentation), and the formation of landforms.
- II. **Mineralogy:** Students learn about the composition, properties, and identification of minerals, which are the building blocks of rocks.
- III. **Petrology:** This branch focuses on the study of rocks (igneous, sedimentary, and metamorphic), their formation, classification, and alteration.
- IV. **Structural Geology:** This area examines the deformation of the Earth's crust, including folds, faults, and other structures that result from tectonic forces.
- V. **Stratigraphy:** Students study the principles of rock layering (stratigraphy) and the geological timescale, including the history of Earth as recorded in rock formations.
- VI. **Paleontology:** This field focuses on the study of fossils, providing insights into the history of life on Earth and past environments.

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Paper-III/IV

OPTIONAL SUBJECT : FORESTRY

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- **Forest Management** : This includes forest mensuration forest inventory , forest valuation and the principles of forest management
- **Silviculture**: This focuses on the theory and practice of controlling the establishment composition, growth, and quality of forests
- **Forest Ecology**: This covers the study of forest ecosystems, biodiversity, and the interactions between living organisms and their environment
- **Forest Biology and Tree Improvement** :This area deals with the genetics of trees, tree breeding, and seed technology
- **Forest Products and Utilization**: This includes the study of wood anatomy, wood products, non-timber forest products, and the marketing and certification of forest products
- **Wildlife Management**: This covers the study of wildlife populations, their habitats, and the management of wildlife resources.

SPECIFIC TOPICS

- **Dendrology**: The study of trees, including their identification, classification, and characteristics
- **Forest Genetics and Tree Improvement**: This includes topics like tree breeding, seed technology, and the application of biotechnology in forestry
- **Forest Ecology and Biodiversity Conservation**: This area focuses on understanding forest ecosystems, their biodiversity, and the methods for conserving them.
- **Wood Anatomy**: This involves the study of the microscopic structure of wood
- **Wood Products and Utilization**: This includes the study of various wood products, their properties, and their uses
- **Ethnobotany and MAPs**: The study of the relationship between people and plants, including the use of non timber forest products.
- **Logging and Ergonomics**: The study of logging operations and the ergonomic principles involved in forestry work.
- **Non-Timber Forest Products**: The study of various products from the forest other than timber, such as medicinal plants, fruits, and resins.
- **Forest Biotechnology**: The application of biotechnology to forestry, such as in tree improvement and disease resistance.
- **Wildlife Management**: The study of wildlife populations, their habitats, and the management of wildlife resources

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Paper-III/IV

OPTIONAL SUBJECT : ENVIRONMENTAL SCIENCE

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

I. Ecology and Ecosystems:

- Fundamental Concepts: Understanding ecological principles, energy flow in ecosystems, food chains and webs, ecological pyramids, and biotic interactions.
- Ecosystem Types: Studying terrestrial (forest, grassland, desert, tundra, alpine) and aquatic (lake, mangrove, coral reefs) ecosystems, including their characteristics and processes.
- Biogeochemical Cycles: Understanding the cycling of essential elements like carbon, nitrogen, and phosphorus.
- Ecosystem Stability: Factors affecting stability and ecosystem services.
- Population Ecology: Population characteristics, growth, regulation, and dispersion.

II. Environmental Pollution:

- Types of Pollutants: Air, water, soil, noise, radioactive, and thermal pollution
- Sources and Impacts: Understanding the sources, causes, effects, and consequences of various pollutants.
- Waste Management: Solid waste disposal, management, and waste-to-energy conversion.
- Pollution Control: Initiatives like Bharat Stage Standards, recent advancements in pollution control technologies.
- E-waste and Plastic Pollution: Specific focus on emerging challenges.

III. Biodiversity:

- Levels of Biodiversity: Understanding genetic, species, and ecosystem diversity.
- Biodiversity Measurement: Methods for assessing biodiversity.
- Biodiversity in India: Flora and fauna, biogeographical classification, and conservation efforts.
- Threatened Species: IUCN Red Data Book, threatened species, and conservation strategies.
- Protected Area Network: National parks, sanctuaries, and biosphere reserves.

IV. Environmental Impact Assessment (EIA):

- Importance and Need: Understanding the role of EIA in environmental management.
- EIA Process: Steps involved in an EIA cycle.
- Components of EIA: Identifying and assessing potential environmental impacts.
- Drawbacks and Recommendations: Addressing the challenges and limitations of EIA.

V. Climate Change:

- Greenhouse Gases: Understanding the role of greenhouse gases in climate change.
- Global Warming and Ozone Depletion: Causes, impacts, and mitigation strategies.
- Acid Rain and Smog: Formation and impacts.
- Sustainable Development: Principles and practices for sustainable development.

VI. Environmental Ethics and Social Issues:

- Unsustainable Practices: Understanding the social and environmental consequences of unsustainable development.
- Water Conservation and Management: Rainwater harvesting, watershed management, and water resources management.
- Resettlement and Rehabilitation: Social issues related to displacement due to development projects.
- Environmental Legislation: Awareness of relevant environmental laws and regulations.

VII. Government Initiatives:

- National and International Policies: Understanding government initiatives and policies related to environmental protection.
- Conservation Projects: Awareness of ongoing conservation projects and initiatives in India.



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Paper-III/IV

OPTIONAL SUBJECT : CIVIL ENGINEERING

(Multiple Choice Question)

Marks - 200

Time- 2 HRS

TOPICS (Bachelor Degree Standard)

- Construction Materials: Properties and uses of various construction materials.
- Transportation Engineering: Road construction.
- Surveying: Principles and techniques of surveying.
- Geotechnical Engineering: Soil mechanics, foundation engineering
- Environmental Engineering: Water supply, wastewater treatment, air pollution.
- Estimation and Valuation: Cost estimation, valuation of properties.
- Construction Management: Project planning, scheduling, and execution.
- Water Resource Engineering: Hydrology, irrigation, dams, open channel flow.
- Sanitary Engineering: Waste management, sanitation systems.
- Design of RCC structures.

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