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NOTIFICATION

No.A.12018/7/2009-AGR/Pt-II, the 15th October, 2024: In supersession of this Department's Notification of even number dated 18.7.2023, the competent authority is pleased to notify the syllabus for direct recruitment of Junior Grade of Mizoram Agriculture Service (appended herewith) with immediate effect and until further orders.

This syllabus is vetted by DP&AR(GSW) vide I.D.No.A.32013/2/2023- P&AR(GSW) dt.23.9.2024

Ramdinliani

Special Secretary to the Govt. of Mizoram
Agriculture and farmers' Welfare Department.

**APPROVED SYLLABUS FOR JUNIOR GRADE OF MIZORAM AGRICULTURE SERVICE FOR
COMBINED TECHNICAL EXAMINATIONS OF AGRICULTURE & ALLIED SERVICES**

1. General English (Matriculation or equivalent standard) :100 Marks (3 hours)

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| (a) | Precis Writing | : 14 Marks |
| (b) | Letter Writing | : 10 Marks |
| (c) | Comprehension of given passages | : 10 Marks |
| (d) | Grammar: Parts of Speech | : 30 Marks |
| (e) | Correct usage and Vocabularies | : 16 Marks |
| (f) | Formation of Sentence | : 20 Marks |
| | (i) Verbs | |
| | Tenses : Present/Past forms, Simple/continuous forms, Perfect forms, Future time reference | |
| | (ii) Sentence Structure | |
| | Connectors | |
| | Types of sentences: Affirmative/interrogative sentences, Negation, Exclamations. | |
| | Types of Phrases and Clauses: finite and non-finite subordinate clauses, noun clauses and phrases, adjective clauses and phrases, adverb clauses and phrases | |
| | Narration (Direct and Indirect speech) | |

2. General Studies : 100 Marks (3 hours)

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| (a) | Current events of state, national and international Importance | : 12 Marks |
| (b) | History of India and Indian National Movement | : 12 Marks |
| (c) | Indian and world Geography - Physical, Social, Economic Geography of India and the world | : 12 Marks |
| (d) | Indian Polity and Governance -
Constitution, Political System, Public Policy, Duties & Rights Issues | : 12 Marks |
| (e) | Economic and Social Development Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, and other related issues | : 12 Marks |
| (f) | General issues on Environmental Ecology, Bio-diversity and Climate | : 12 Marks |
| (g) | General Science | : 12 Marks |

The topics listed above shall cover the State of Mizoram wherever applicable.

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| (h) | General awareness on Mizo culture, its heritage and Society | :16 Marks |
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TECHNICAL PAPERS

AGRICULTURE SCIENCE PAPER - I	-	200 marks
I. Agronomy	-	60 marks
II. Soil Science	-	50 marks
III. Organic farming	-	30 marks
IV. Seed & seed production technology	-	30 marks
V. Soil and water conservation	-	30 marks
AGRICULTURE SCIENCE PAPER-II	-	200 marks
I. Plant pathology	-	50 marks
II. Plant Breeding and Genetics	-	50 marks
III. Entomology & Nematology	-	40 marks
IV. Crop Physiology	-	30 marks
V. Horticulture	-	30 marks
AGRICULTURE SCIENCE PAPER-III	-	200 marks
I. Agriculture extension	-	50 marks
II. Agriculture Economics and Marketing	-	40 marks
III. Environmental Science	-	40 marks
IV. Post-Harvest Management	-	40 marks
V. Farm Power, Machinery and Equipment	-	30 marks

**SYLLABUS FOR TECHNICAL PAPERS
FOR JUNIOR GRADE OF MIZORAM AGRICULTURE SERVICE (MAS)**

AGRICULTURE PAPER I (200 Marks)

I. Agronomy (60 marks)

National policy on Agriculture, importance of Agriculture in national economy, principles of Agronomy, crop ecology, geography and Agricultural Meteorology. Agronomy - meaning and scope, National & International Agricultural Research Institutes in India, Agro climatic zones of India, Tillage and intercultural operations, implements for ploughing, nursery management, Precision farming, Integrated farming systems, Principles of crop ecology and crop adaptation, climate shift and its ecological implications, Agro-ecological regions in India, Geographical distribution of crop plants, Greenhouse effect, Climatic factors and their effect on plant processes and crop productivity, Role of GIS and GPS in agriculture. Weather & Climate, Atmospheric temperature and global warming, Weather forecasting.

Origin, distribution, economic importance, soil and climatic requirement, varieties, cultural practices and yield of cereals, pulses, oilseeds, fiber crops, fodder & forage crops and commercial crops.

Weed management : Principles of weed management, classification, biology and ecology of weeds, crop weed competition and allelopathy, concepts and methods of weed control, Integrated weed management, classification, formulations, selectivity and resistance of herbicides, herbicide persistence in soil and plants, application methods and equipments.

II. Soil Science (50 marks)

Soil as a medium for plant growth, composition of earth's crust, weathering of rocks and minerals, components of soil - their importance, soil profile. Soil physical properties - density, porosity, texture, soil structure and their brief descriptions. Factors affecting soil temperature, its importance in plant growth. Cation exchange capacity, anion exchange capacity, buffering of soils. Problem soils - acid, saline and sodic soils - their characteristics, formation, problems and management.

Soil fertility and fertilizers : Essential plant nutrients and their deficiency symptoms, concept of essentiality of plant nutrients, indicators of soil fertility and productivity, fertilizer materials and their availability to plants, slow release fertilizers, principles and methods of fertilizer application, Integrated Nutrient Management, methods of soil sample collection, soil testing and fertilizer recommendations. Soil classifications - major soils of India, soil micro-organisms, classification and their roles. Organic matter decomposition, C:N ratios, mineralization and immobilization process, humus, role of organic matter in soil quality. Soil erosion, types and control measures. Fertilizers and manures - classifications, NPK fertilizers, their reactions in soils, green manuring, recycling of organic waste, composting. Characteristic features of Biofertilizers.

III. Organic Farming (30 marks)

Organic farming, principles and its scope in India; Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture; Organic ecosystem and their concepts; Organic nutrient resources and its fortification; Restrictions to nutrient use in organic farming; Choice of crops and varieties in organic farming; Fundamentals of insect, pest, disease and weed management under organic mode of production; Operational structure of NPOP; Certification process and standards of organ-

ic farming; Processing, leveling, economic considerations and viability, marketing and export potential of organic products.

IV. Seeds & Seed Production Technology (30 marks)

Definition of seeds, seed certification techniques and processing, Seed testing laboratories, ISTA standards for seed testing, Seed village concept and Seed Act, production techniques of quality seeds, seed hybridization, principles of plant breeding and genetics, GM seeds, HYV, Hybrid seeds. Seed sampling : principles and procedures, Seed storage and packaging. Intellectual Property Rights - Protection of Plant Varieties and Farmers Act (PPVFRA) and Geographical Indications.

V. Soil and Water Conservation (30 marks)

Soil erosion and types of erosion. Quantitative soil loss estimation, universal soil loss equation and its subsequent modifications. In-situ measurement of soil loss. Field practices in controlling erosion by water and wind. Soil and Water conservation structures and their design. Gully control: vegetative measures, temporary, semi-permanent and permanent structures for gully control and reclamation and their design. Design and construction of farm pond and reservoir. Seepage theory. Design of earthen dams and retaining walls, stability analysis on slopes. Application of RS and GIS in soil and water conservation.

Concept of Soil and Water conservation, Relevance of soil and water conservation in Agriculture, Problems caused by soil erosion, factors affecting soil erosion, Types of soil erosion, mechanics of water and wind erosion, Erosivity and Erodibility

VI. Horticulture (30 marks)

Meaning & definition of horticulture, branches of Horticulture, classification of fruits, vegetables. Major fruit crops and their culture, major vegetable crops and their culture, Spices and condiments, floriculture, medicinal and aromatic plants, plantation crops, kitchen gardening. Methods of plant propagation. Major pests and diseases and their control of Horticulture crops.

AGRICULTURE PAPER-III (200 marks)

I. Agricultural Extension (50 marks)

Extension Education - concept, meaning, principles, philosophy, scope and importance; Extension programme planning. Principles of teaching and learning, teaching and learning process, Steps in Extension teaching, Extension Teaching methods and its classification, Participatory Rural Appraisal (PRA), Monitoring and evaluation process. Diffusion and adoption, Role of women in Agriculture. Communication, principles, concepts, process, elements and barriers in teaching methods. Communication - Key elements and models of Communication, Communication through written forms, different kinds of communication methods, media and Audio Visual aids/materials. Kisan Cali Centers, teleconferencing, agriculture journalism, diffusion and adoption of innovations-adopter categories, capacity building of extension personnel and farmers - training to farmers, women and rural youth.

II. Agricultural Economics and Marketing (40 marks)

Basic principles of farm management, concept of farming system and economics of farming systems, agricultural production economics-scope and analysis, factor-product relationship, marginal cost and marginal revenue, farm planning and budgeting, Agricultural finance : nature and scope. Time value of money, compounding and discounting. Agricultural credit: meaning, definition, need and classification. Credit

analysis : 4R's, 5C's and 7 P's of credit, repayment plans. History of financing agriculture in India. Commercial banks, nationalization of commercial banks. Lead bank scheme, regional rural banks, scale of finance. Higher financing agencies, RBI, NABARD, AFC, Asian Development Bank, World Bank, role of capital and credit in agriculture; credit institutions, co- operatives and agrarian reforms in India.

Agricultural marketing - role, practice, institutions, problems and reforms, role of capital and credit in agriculture, crop insurance, credit institutions, cooperatives, capital formation in agriculture, agrarian reforms, globalization, WTO & its impact on Indian agriculture.

III. Environmental Science (40 marks)

Definition and scope of environmental science and its interrelationship with other sciences and agriculture; Segments : Atmosphere: Hydrosphere, Lithosphere and Biosphere; Components of environment - biotic, abiotic and social; Ecology concept - types - habitat ecology, systems ecology, synecology, autecology; Ecosystem: Structure- Functions; Communities - habitats, niches, biomes, population dynamics, species and individual in the ecosystem; Recent trends in ecology; Energy flow in ecosystems and environment; Energy exchange and productivity-food chains and food webs- ecological pyramids; Ecological succession - types and causes. Biogeochemical cycles; nutrient cycles and recycle pathways. Biodiversity concepts, levels and types, Values and Significance of biodiversity; Theories on biodiversity; Agro-biodiversity - Transgenic crops and animals - Impact on Environment. Environmental Pollution - Point and non-point sources - Atmosphere - stratification - Composition of air-; Air pollution: sources and classification, Greenhouse gases - Global warming - Ozone depletion - Acid rain - Impacts on Environment, Adaptation and mitigation strategies of climate change - Carbon sequestration and clean development mechanism.

IV. Post Harvest Management (40 marks)

Biochemical and engineering properties of biological materials; quality control & safety of raw and finished products. Principles, practices and equipments for drying, milling, separation and storage of agricultural produce and by-products; material handling equipment and operations; farmstead planning; heating & cooling load calculation; seed processing practices and equipments; food preservation methods and products development; refrigeration and air conditioning; cold stores; waste management, cost analysis & food processing plants layout, feasibility reports.

V. Farm Power, Machinery and Equipments (30 marks)

Status of Farm Power in India, Equipments for primary and secondary tillage and seed bed preparation, seeding and planting machineries, Intercultural and Plant protection equipments, Harvesting and threshing machineries, Weeders, Power Tillers and Tractors, Tractor types, Cost analysis of tractor power and attached implement, implement for hill agriculture

Notes:

1. *Detailed syllabus for Technical papers-I, II & III shall be drawn up separately for the Technical Services.*
2. *Technical Papers shall have both MCQ and Conventional Essay Type Questions. MCQ shall carry 10Q marks (50 questions carrying 2 marks each) and Conventional Essay Type shall carry 100 marks.*
3. *There will be more than one alternative for the answer to every MCQ. For each question for which a wrong answer is given by the candidate, one-third of the marks assigned t that question will be deducted as penalty.*
4. *Provisional Answer Key for MCQ will be published within 3 working days from completion of examination with complaint period of 3 working days from publication of Provisional Answer Key.*
5. *Final Answer Key will be published around 2 weeks from publication of Provisional Answer Key after resolving complaints received, if any, regarding the Provisional Answer Key.*
6. *Compensatory marks, if necessary, will be awarded as may be decided by the Commission from time to time.*
7. *Each paper will be of 3 hours duration with compensatory time of 20 minutes per hour for persons with benchmarked disabilities or as prescribed by the Government from time to time.*