Syllabus

TSPSC AEO (Agriculture Extension Officer)

PAPER-I: GENERAL STUDIES AND GENERAL ABILITIES

1. Current Affairs - Regional, National and International
2. International Relations and Events.
3. General Science; India's achievements in Science and Technology
4. Environmental issues and Disaster Management
5. Economy of India and Telangana
6. Geography of India with a focus on Telangana
7. Indian Constitution and Polity with a focus on local self Government
8. Society, Culture, Heritage, Arts and Literature of Telangana
9. Policies of Telangana State
10. History of Modern India with a focus on Indian National Movement
11. History of Telangana with special emphasis on Movement for Telangana Statehood
12. Logical Reasoning, Analytical Ability and Data Interpretation
13. Basic English.

PAPER-II AGRICULTURE (Diploma Level)

1. Agronomy

Agriculture terminology; National and International institutions; Research stations in state universities- Agro climatic zones of Telangana state - characterization, Research priorities. Agroclimatic zones of Telangana State; weather, agricultural meteorology, study of weather parameters - Sunlight, Temperature, Pressure, Transpiration, snowfall, Rainfall- types; rainfall measuring instruments; effect of rainfall on crops; Tillage - effect on soil properties - Factors affecting good tilth; puddling, Sowing methods; Crop stand establishment; Plant geometry - Effect of Plant population on growth & yield; Soil fertility and soil productivity; Soil fertility management; cultivation methods, Nutrient requirement, Organic & Chemical fertilizers- uses; Weeds - losses due to weeds; important aspects of weed control, use of herbicides in major
agricultural crops, Integrated weed management; Irrigation water management, crop water requirement, methods of irrigation, Modern methods of water management - advantages and disadvantages; Drainage; Harvest maturity symptoms; harvest and post-Harvest measures; Rainfed agriculture- improved agronomic practices. Water harvesting, contingency crop plan; Watershed; Cropping systems; crop rotation; Integrated farming systems; Sustainable agriculture; Organic farming- certification.

2. Crop production and improved management practices

Food grain crops; commercials crops, Pulses and Oil seed crops, Fodder crops, Spices and condiments in Telangana and in India Importance, acreage, production, productivity, improved varieties and hybrids developed, suitable soils, climatic conditions, seed rate, seed dormancy, seed treatment, spacing, inter cultivation, seed rate, weed control, water management, integrated nutrient management, improved management practices, harvesting, and post harvest measures.

3. Soil Science

Soil chemical and physical properties; Carbon: Nitrogen ratio and its importance, soil pH, soil organic matter; importance of microorganisms, soil ionic exchange, problematic soils, different types of soils in Telangana state; important nutrients requirement of crop plants; essentiality - forms of nutrient availability. nutrient deficiencies, corrective measures; causes for loss of soil fertility management; soil - environmental pollution - control, classification of organic and chemical fertilizers, composting, vermicompost; biogas plant, green manures, green manure crops, concentrated organic manures; mixed fertilizers- fertilizer use efficiency, bio fertilizers, integrated nutrient management, soil testing methods; global warming - causes, secondary nutrients; complex fertilisers; chelated micronutrients; fertilizer control act.

4. Plant Breeding, Seed Technology, Seed testing

Parts of flower, methods of reproductions in plants, male sterility, vegetative propagation. Plant breeding - selection, hybridization, mutation breeding, polyploidy breeding: methods of breeding for varietal and hybrid development, varietal description, DNA test; importance of seed; seed characters, classes of seed, principles of seed production, management practices in seed production, isolation distance; difference between varietal and hybrid seed production; tips in seed production of different crops, seed certification, seed processing; cleaning and grading equipment, seed treatment, seed testing, seed viability, seed vigour, seed dormancy, seed health, seed packing, seed varietal protection, seed pellets, biotechnology in seed development, Intellectual Property Rights, crop varietal release- trials, release procedure and release. Seed production of field and vegetable crops, seed regulations in India, historical development, nation and international institutions in seed quality control, seed acts and regulations; seed production in fruits and flower crops; seed sampling, physical purity tests, seed moisture tests, genetic purity tests; seed processing - importance and methods; seed storage.
5. Crop pests and their management

Introduction to Entomology. Taxonomy and Characters of class Insecta, Insect Segmentation. agriculturally important insect Orders, Insect mouthparts and types. Symptoms of Damage caused by various insects. Integrated Pest Management Importance, Predators and Parasitoids, Botanicals, chemical insect control, Insecticides - Classification, Compatibility and Formulations; Nematicides, Rodenticides etc. Sericulture, Apiculture and Lac culture. Pests of Agricultural and Horticultural crops - Scientific names - nature of Damage and Management, Stored grain Pests - Management, Non insect Pest Management (Rodents, Birds and Nematodes).

6. Plant diseases and their control

Introduction to Plant pathology- casual organisms, terminology concepts, classification of diseases, etiology, disease spread, pathogens, predisposing factors of diseases, disease management methods use of fungicides, classification of fungicides, common fungicides- mode of action; diagnosis of field diseases, important methods of diseases management, control of diseases, nematodes and plant parasites- their management; diseases of important field and horticultural crops and their management.

7. Horticulture and forestry

Vegetable Crops and their cultivation details; important fruit crops, medicinal, aromatic crops and flower crops of Telangana state- propagation, nursery management, pruning, green houses, principles of fruits and vegetable storage; value addition of fruits and vegetable products; Agro forestry - importance, national forest polices and forest acts; afforestation, management of forest nurseries, important forest plants- uses, their management; Social forestry, wind break trees, timber and non timber forest products - their characters.

8. Agricultural Economics

Agriculture finance - definition, Scope and importance; Regional Rural Banks; NABARD; Self Help Groups; Lead Bank Scheme; Kisan Credit Card; Crop Insurance, preparation and uses of balance sheet, theory of production - law of variable proportions; laws of returns, returns to scale; economies of scale; study of costs and returns; farm business organizations- aims and main objectives, farm management-aims; types of farming, farm planning -types, uses, cooperation-principles; farmers’ cooperative societies -types; co-operative movement in India -history: farmer cooperative societies and Agriculture cooperative societies -types and uses; agricultural credit policy-main features: different types of agricultural credit; cooperative banks, RBI, problems faced by farmers in accessing credit; agricultural marketing- types of Agriculture markets, market efficiency; problems of agricultural marketing-overcoming measures; price determination; seed industry-importance; seed price policies; market price and normal price.

9. Agricultural Extension and Rural Development

Education- Formal and informal education-differences; Extension education- scope and importance; Extension Teaching methods-uses and limitations; Agriculture information
publications-types limitations, uses; Instructional aides; Extension programme planning stages; principles of programme planning. Evaluation - types and importance; Rural sociology-importance; characteristics of Indian Rural Society; differences between rural and urban societies; Rural development objectives and constraints, Participatory Rural Appraisal- important characters, Principles, methods. Leadership- qualities. Classification; selection and training of leader; Pre and Post-Independence developmental programmes; society development guidelines; democracy and decentralization - Panchayat Raj System; importance. Three Tier system of Panchayat Raj-functions; Mandal system in Telangana - organizational characters; Extension reforms-Importance of ATMA.

10. Agricultural Energy Sources, Machinery

Energy resources in Agriculture; farm engines their parts, differences; Characteristics of Fuels, Tractors-types; Tractor Management; Power Tiller- Working Mechanism, Ploughing Implements; Bund Formers, Traditional Sowing Equipment, Types of Sprayers-Dusters, Weeding Implements; Crop Harvesters, Threshers- their management; Winnowing- methods; post harvest equipments, grain drying methods; grain storage structures- types, uses; food grain storage.

11. Land surveying, water engineering and Green House Technology

Surveying- types, errors; methods of Irrigation water measurement: Drip and Sprinkler irrigation systems- importance; types of pumps- repairs; Greenhouses- importance, types, material for construction; Environmental conditions in green houses- their control; shade nets- their uses.
PAPER-II Agriculture Engineering (Diploma Level)

UNIT I: SURVEYING AND LEVELLING

Surveying: Concept and purpose, linear and angular measurements - Fundamental principles of surveying - Classification of survey and purpose of field work. Chain Survey: Purpose and principle, equipment used - Errors - Ranging types - Recording field notes - Obstacles in chaining - Calculation of area of irregular field. Compass surveying: Purpose and principle, working and uses - Concept of true and magnetic meridians - Types of bearings - Conversion of bearings. Declination - conversion of magnetic and true bearings.


UNIT II: HYDROLOGY AND SOIL & WATER CONSERVATION ENGINEERING


Watershed: Definition, identification, delineation and physiographic characteristics - Management of agricultural watersheds - Integrating soil and water conservation measures into watershed development - Participatory watershed development capacity building - Monitoring and evaluation of watershed projects in Telangana State.

UNIT III: IRRIGATION AND DRAINAGE

Irrigation: Necessity and development in India - Present status of water sources - Surface irrigation methods in Telangana State - Sprinkler and Drip irrigation systems: Types, advantages and disadvantages, adoptability, Hydraulics, Planning and design Installation, Operation and Maintenance and Troubles and remedies - Fertigation equipment- Types of Emitters, Emitter flow Equation - Distribution Uniformity and irrigation Efficiency - Field evaluation of the system - Cost estimation of drip irrigation system for row and orchards.

Drainage: Objectives, Causes and effects, Control of water logging. Interrelationship of irrigation and drainage. Surface drainage system: Factors effecting surface drainage and drainage coefficient,
different types and their design. Sub surface drainage system: types of drainage systems and their design.


UNIT IV: RENEWABLE ENERGY SOURCES

Farm power: Different sources - Advantages and disadvantages - Types and need renewable sources of energy. Solar energy: Solar energy collection, Types of collectors, Methods of storing solar energy, water heater, power generation, refrigeration system, space cooling and heating. Solar still, cooker, Solar water pumping system, lantern, street light and fencing. Solar dryer. Wind energy: Classification, Wind mill for water pumping (wind pump) and electric power generation (wind turbine) - Horizontal and Vertical axis wind mills.


UNIT V: WORKSHOP TECHNOLOGY

Workshop technology: Introduction, Basic workshop process, Carpentry, Bench work and fitting - Smithy and forging - Sheet metal - Mechanical working of metals - Carpentry - Planning tools - Carpentry process - Fitting - Cutting tools - Drill bits - Gauges - Hammers - Sheet metal operations.


Internal Combustion Engines: Working cycle of 4-stroke(4-5) diesel and petrol engines - Working cycle of 2-stroke (2-5) Petrol Engine-Comparison between 4-5 and 2- S Engines - Distinguish diesel and petrol Engines - Different systems of IC engines (Fuel Supply, Ignition, Cooling Lubrication systems.)
UNIT VI: AGRICULTURAL IMPLEMENTS AND MACHINERY


UNIT VII: AGRICULTURAL STRUCTURES & PROCESS ENGINEERING

Crop processing - Cleaning, grading, sorting, drying milling including size reduction, extraction, distillation, centrifugal separation of various crops like cereals, pulses, oilseeds, etc., Minimize post harvest losses by value addition to the agricultural produce - Various process technologies for cereals, pulses, oilseeds and their conveying and elevating equipment - Threshing, winnowing, rice milling equipments and various process technologies for cereals, pulses, oilseeds.


Farmstead: Definition and constitution, Various types Planning and layout - Dairy barns - Poultry housing - Sheep and goat housing - Construction of farm buildings -Building materials - Quantity survey - Design of storage structures - Farm fencing - Farm roads - Design and construction of threshing yard.

UNIT VIII: AGRICULTURAL SCIENCES & COMPUTER BASICS

Development of Agriculture in India, Agro climatic zones in Telangana State - Monsoons, Seasons, seasonal crops of Telangana State. Sustainable Agriculture and Organic farming. Fertilizers - Dryland Agriculture - Soil structure - Bulk density - Soil water movement. Agricultural production economics in Telangana State: Definition, objectives of production economics, nature & scope and subject matter of agricultural production economics, Relationship with other sciences. Agricultural marketing, Market functions. Agro-based industries. Economic principles applied to the organization of farm business. Audio-visual aids & other extension methods and through effective communication skills for organizing meetings effectively.
Computer, Advantages and disadvantages, computer system components and their functions - MS Word, MS Excel, Power Point menu bars and Internet applications.