Detailed Syllabus for the post of Tradesman (Agriculture)in the Technical Education department)(Category No.278/2025)

Total : 100 Marks

Sl. No.	Module No.	Topic of the Module	Marks
1	Module 1	Agronomy, Weed Management & Agricultural Meteorology	14
2	Module 2	Soil Science and Fertility Management	12
3	Module 3	Horticulture (Fruits, Vegetables, Spices, Plantation & Ornamentals)	12
4	Module 4	Plant Physiology and Biochemistry	10
5	Module 5	Entomology and Pest Management	10
6	Module 6	Plant Pathology and Disease Management	10
7	Module 7	Seed Technology and Nursery Management	10
8	Module 8	Post-Harvest Technology and Value Addition	8
9	Module 9	Agricultural Economics, Farm Management & Rural Development	7
10	Module 10	Extension Education, Communication & Farm Mechanization	7
		Total Marks	**100**

Detailed Syllabus

MODULE 1: AGRONOMY, WEED MANAGEMENT & AGRICULTURAL METEOROLOGY (Marks: 14)

Fundamentals of Agronomy - Meaning, scope, and importance of agronomy. Branches of agriculture and interrelations. Classification of crops (life cycle, season, and use). Cropping systems – mono, mixed, inter, multiple, and relay cropping. Cropping patterns in Kerala – Virippu, Mundakan, and Puncha. Tillage – objectives, types, and implements used. Sowing methods, seed rate, spacing, and time of sowing. Irrigation and drainage methods. Weed Science and Crop Management - Definition, characteristics, and classification of weeds. Common weeds of Kerala – rice, banana, coconut, vegetables, plantation crops. Weed–crop competition and critical period. Methods of weed control – preventive, cultural, mechanical, biological, and chemical. Herbicides – classification, formulation, dosage calculation, and safe handling. Integrated Weed Management (IWM) – concept, advantages, and examples from Kerala crops. Agricultural Meteorology & Climate-Smart Farming - Weather and climate – definition, elements, and influence on crops. Monsoon pattern and rainfall distribution in Kerala. Agro-climatic zones of Kerala and their cropping systems. Measurement of weather parameters (temperature, pressure, humidity, rainfall, wind). Weather forecasting and agro-advisory services. Droughts, floods, and cyclones – effects and management. Microclimate modification – shade nets, shelterbelts, mulching. Climate-smart and sustainable farming practices – integrated, organic, and precision farming.

MODULE 2: SOIL SCIENCE AND FERTILITY MANAGEMENT (Marks: 12)

Soil formation, composition, and profile. Major soil types of Kerala – laterite, alluvial, sandy, peaty, red soils. Soil formation – factors and process, weathering, Soil profile, horizons. Physical, chemical, and biological properties of soil. Soil pH, texture, structure, and their influence on fertility. Soil water and air. Essential plant nutrients – classification and deficiency symptoms. Fertilizers – classification, composition, and application methods. Organic manures – FYM, compost, green manuring, vermicompost. Biofertilizers – Rhizobium, Azospirillum, Azolla, Azotobacter, PSB. Integrated Nutrient Management (INM). Soil erosion – causes, types, and control measures under Kerala conditions. Soil testing, liming, and fertilizer recommendation methods.

MODULE 3: HORTICULTURE (FRUITS, VEGETABLES, SPICES, PLANTATION & ORNAMENTALS) (Marks: 12)

Scope and importance of horticulture in Kerala. Classification and importance of horticultural crops. Propagation methods – seed, cutting, layering, grafting, budding, tissue culture. Nursery management – site, layout, potting mixtures,

shade houses. Cultivation practices – Fruits (banana, mango, pineapple, papaya, guava), Vegetables (amaranthus, okra, cucumber, snake gourd, bitter gourd, chilly, tomato, brinjal, cowpea), Spices (pepper, cardamom, turmeric, ginger), Plantation crops (coconut, arecanut, rubber, tea, coffee), Flowers (jasmine, anthurium, chrysanthemum, marigold, orchids, rose), Medicinal and aromatic crops (tulsi, aloe vera, aswagandha, vetiver), Fodder crops (hybrid napier, guinea grass, CO series). Post-harvest handling and storage. Government programmes – NHM, MIDH, VFPCK, Haritha Kerala Mission.

MODULE 4: PLANT PHYSIOLOGY AND BIOCHEMISTRY (Marks: 10)

Plant cell, tissues, and their functions. Photosynthesis, respiration, and transpiration – process and significance. Water relations in plants – absorption, wilting. Mineral nutrition and nutrient uptake. Plant growth regulators – auxins, gibberellins, cytokinins, ethylene, abscisic acid. Photoperiodism and vernalization. Physiological disorders in crops (chlorosis, tip burn, fruit cracking, sun scald, blossom end rot etc.). Role of enzymes, hormones, and vitamins in plant metabolism. Stress physiology – drought and salt tolerance mechanisms.

MODULE 5: ENTOMOLOGY AND PEST MANAGEMENT (Marks: 10)

Importance of entomology in agriculture. Insect morphology, life cycle, and classification. Economic importance of pests. Major insect pests of Kerala crops – Paddy, Coconut, Rubber, Banana, Mango, Tapioca, Vegetables (solanaceous, cucurbitaceous), Pepper, Cardamom. Integrated Pest Management (IPM) – concept and components. Cultural, mechanical, biological, and chemical control. Safe handling and application of pesticides. Beneficial insects – pollinators, predators, and parasitoids. Storage pests and their management. Use of pheromone traps, bio-pesticides, and neem formulations.

MODULE 6: PLANT PATHOLOGY AND DISEASE MANAGEMENT (Marks: 10)

Definition and importance of plant pathology. Causal organisms – fungi, bacteria, viruses, nematodes. Symptoms and Stages in disease development and mode of spread. Identification and diagnosis of diseases. Major diseases of Kerala crops – Paddy, Coconut, Rubber, Banana, Mango, Pineapple, Tapioca, Vegetables (solanaceous, cucurbitaceous), Pepper, Cardamom, Ginger. Integrated Disease Management (IDM). Fungicides, bactericides, and bio-control agents (Trichoderma, Pseudomonas). Sanitation and crop rotation. Plant quarantine measures and safe handling of chemicals.

MODULE 7: SEED TECHNOLOGY AND NURSERY MANAGEMENT (Marks: 10)

Importance of quality seed. Characteristics of good seed – purity, viability, vigour. Classes of seed – breeder, foundation, certified. Seed production,

processing, and storage. Seed certification, labeling, and testing. Seed viability and dormancy management. Seed treatment – physical, chemical, biological. Nursery layout, soil sterilization, and shade management. Raising seedlings for rice, vegetables, flowers, and spices. Nursery pest and disease management.

MODULE 8: POST-HARVEST TECHNOLOGY AND VALUE ADDITION (Marks: 8)

Importance of post-harvest management in fruits, vegetables, and spices. Grading, sorting, and packaging techniques. Storage methods – cold storage, curing, drying, and ripening. Minimal processing and preservation techniques. Value-added products from coconut, banana, tapioca, jackfruit, and spices. Food safety and quality standards. Marketing and branding of value-added farm products.

MODULE 9: AGRICULTURAL ECONOMICS, FARM MANAGEMENT & RURAL DEVELOPMENT (Marks: 7)

Meaning and Importance of Agricultural Economics. Law of Demand and Supply in Agriculture. Cost of Cultivation and Farm Income Concepts. Agricultural Marketing. Agricultural Credit and Institutions. Farm Management Principles. Farming Systems and Farm Records. Rural Development Programs. Cooperatives and Farmer Producer Organizations (FPOs). Agri-Entrepreneurship and Agri-Business Management.

MODULE 10: EXTENSION EDUCATION, COMMUNICATION & FARM MECHANIZATION (Marks: 7)

Concept, principles, and objectives of agricultural extension. Role of extension in rural development. Teaching and learning process in farmer education. Extension methods – individual, group, and mass approaches. Communication in extension – elements, barriers, aids. KVK, ATMA, and Agricultural Development Programs in Kerala. Farmer training, demonstrations, and field visits. Agricultural tools and implements – classification and use. Farm mechanization – seed drills, sprayers, weeders, harvesters. Safety measures and maintenance of farm machinery.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.