PART - I

1. Elementary Agronomy

2. General Horticulture
Orchard planning (Soils, Climate, Nutrition, Training, Pruning, Flowering and fruiting problems and bearing habits), Bonsai. Nursery management and propagation methods. Types of vegetable gardening; Physiological disorders in vegetables and fruits. Principles and methods of preservation of important fruits and vegetables and processing techniques. Landscape, Floriculture including raising of ornamental plants. Design and layout of gardens.

3. Basic Genetics

4. Crop Improvement
Center of Crop diversity, mode of reproduction, variability in plants, Germplasm Male sterility and self incompatibility. Heterosis and inbreeding depression, Breeding methods for crop improvement

5. Plant Protection
Classification and symptoms of plant diseases, Principles of plant disease control including (exclusion, eradication, immunization and protection) Classification of pesticides and formulations. Agents and basic steps of biological control. Integrated diseases and insect pest management. Principle methods of control of stored grain pest and storage pests. Methods of rodent control. Spray equipments, their selection and maintenance. Safety precautionary measures during pesticide usage. Bee keeping (apiculture) and mushroom cultivation. Legal control - plant quarantine and insecticidal act.

6. **Basic agro-forestry**

Silvi-culture and agro-forestry, Classification of agro-forestry system; Waste land and watershed development through agro-forestry

7. **Elements of crop physiology**

Absorption and translocation of water and nutrients. Transpiration and water economy. Photosynthesis and respiration. Growth analysis and its importance. Photo-periodism and vernailisation. Growth hormones, senescence and post-harvest physiology (seed dormancy, storage physiology and fruit ripening)

8. **Organic farming**

Definition of organic Farming, Components and its role in sustainable Agriculture Bio-fertilizers, production and use; Role of neem Products in crop protection. Role of microorganisms in agriculture

9. **Dry land farming**

Dry land agriculture for sustaining agricultural production. Soil and Water management with special reference to dry land agriculture.

**PART - II**

There will be two optional sections (A & B) Candidate will have to answer all the questions from the opted section.

**SECTION - A**

Will be based on production & protection of the following main crops:

<table>
<thead>
<tr>
<th>Field crop groups</th>
</tr>
</thead>
</table>
| Cereals           : Wheat, rice, maize and sorghum  
| Pulses Crops      : Pigeon pea, chick pea, Urid and Mung  
| Oilseeds Crops    : Soybean, groundnut, rapeseed/mustard  

Cash crops : Cotton and sugarcane

SECTION - B
Will be based on production & protection of the following horticultural crops :

<table>
<thead>
<tr>
<th>Horticultural crop groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
</tr>
<tr>
<td>Vegetable crops</td>
</tr>
<tr>
<td>Cole crops</td>
</tr>
<tr>
<td>Leafy vegetables</td>
</tr>
<tr>
<td>Flowers</td>
</tr>
<tr>
<td>Spices</td>
</tr>
</tbody>
</table>

AGRICULTURE (CODE NO. 01)

PAPER - II

1. Seed technology
Seed technology: definition and importance. Varieties, Seed germination and dormancy. Planting value. Seed and variety deterioration. DUS and VCU test. Physical and genetic purity. Seed health. Seed legislation and certification; Classes of seeds; basic principles of Seed production and processing

2. Agricultural biotechnology
Methods and application of plant tissue culture; D.N.A. based marker gene cloning and tools for recombinant DNA technology

3. Agricultural economics and farm management
Agriculture marketing and its problems; Marketing costs, Profit margins and efficiencies. Cooperative marketing in India. EXIM policies and farm commodities for export. Barriers of export in context to WTO. Farm management, types and systems of farming and factors affecting them.

4. Agricultural extension education
Rural society and institutions. Definitions, characteristics and importance of social stratification and culture. Agricultural extension - its importance; Importance and methods of extension training and evaluation. Importance of rural development programmes in India in post-independence period. Communication and diffusion of agricultural innovations. Role of KVKs in dissemination of agricultural technologies. Role and functions of ATMA

5. Agricultural statistics
Measures of central tendency and dispersion. Correlation and regression. Graphs and diagrams

6. Computer application in agriculture
Types and classification of computers. Data operating systems. Library function. Data management.

7. Soil Science and Microbiology

8. Biodiversity and natural resource conservation
Natural resources (Forest and water), their management and conservation. Environmental pollution (air, water, soil and nuclear) and associated hazards to crops. Solid waste management. Utility of plant genetic resources in crop improvement. Germplasm collection and conservation.

9. Food science and food biochemistry
10. **Farm management**

Farm management planning and budgeting. Role of farming systems in sustainable agriculture. Significance of farm mechanization in agricultural production