

# VBS Purvanchal University

## Jaunpur

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### Syllabus B.Sc. Ag. Part-II

#### Paper –I

#### Agriculture Chemistry

M.M.: 50

#### Theory

Scope of Biochemistry, Plant and Animal cells; their composition and Biochemical functions.

Colloidal state, diffusion, Osmosis, Osmotic Pressure and its determination, Membrane Phenomenon. Acids, Bases, pH and Buffers, Nucleic acids, RNA, DNA,

Carbohydrates: Classification, their chemistry and biosynthesis, Protein and amino acids: classification, their chemistry and biosynthesis in plants. Lipids and fatty acids: classification, their chemistry and biosynthesis in plants.

Oxidation and reduction in biological process, concepts of metabolism, Metabolism of carbohydrates, Lipids and protein.

Hormones and Phytohormones, Elementary knowledge of plant pigments.

Enzymes: Classification, general properties, mechanism of action, factors affecting their activities.

Vitamins: Classification, Chemistry, Biochemical functions, physiological role, deficiency symptoms and requirement, Biological changes during germination growth and ripening in fruits, vegetable and crops.

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### Paper –II

### Farm Engineering

M.M.: 50

#### Theory

- 1. Farm Mechanization:** Necessity, Scope and Importance of mechanized farming in India.
- 2. Sources of farm Power:** Various conventional and non-conventional sources of farm power, their utilization, merits and demerits.
- 3. I.C Engines:** Classification, important parts & functions, principles of operation of 4-stroke and 2-stroke cycle I.C Engines their utility of farms. Comparison between compression ignition and spark ignition engines valve timing and firing order.

Engine terminology and calculation of stroke-bore ratio, compression ratio, piston displacement; Displacement Volume; piston speed I.H.P.; B.H.P.; D.B.H.P. and mechanical efficiency.

Brief study of the following different systems of I.C.Engines:

- (i) Fuel injection, fuel supply and carburetion.
- (ii) Ignition
- (iii) Cooling
- (iv) Lubrication

Common engine troubles and their remedies.

- 4. Tractors:** Classification, selection, availability and purchase of tractors, Periodical Maintenance of tractors and their storage.  
Calculation of cost of operation of tractors.
- 5. Farm Machinery:** Study of construction, types, working, principles, Repair and Maintenance, Capacity and cost of operation of the following farm equipments:
  - (i) Sowing Equipments.
  - (ii) Planting equipments (excluding transplanters)
  - (iii) Harvesting equipments
  - (iv) Threshing equipments including paddy threshers.
  - (v) Winnowing Equipments.
  - (vi) Planning Farm stead and study of septic tank.

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### Paper –III

#### Horticulture (Pomology and Social Forestry)

M.M.: 50

#### Theory

##### A. Pomology

Role of fruits in human diet and agricultural economy, General survey of fruits grown in U.P. with special reference to Climate, Plant propagation technique-their merits and demerits; Nursery management and plant growing structures; Pruning and Training of Horticultural plants; water requirements (Irrigation) unfruitfulness and remedies; fruitset and fruit drop; irregular and alternate bearing; harvesting grading, packing, transport, marketing and storage of fruits.

Selection of site for an orchards, Cultivation of important fruit crops such as Mango, Banana, Citrus, Guava, Papaya, Lichi, Grapes, Ber, Aonla, Pineapple, Jackfruit, Apple, Pear, Peach and Plum, Concepts of high density orcharding.

##### B. Social Forestry

Importance and scope of social and farm forestry, Crop growing under Trees. Arboriculture in relation to climate and soil. Trees of timbers, fuel, wind breaks and shelter belts.

Trees suitable for planting in villages, high ways, Road sides, waste land and bunds, their planting and management. Vanamahotsava and its significance. Planting and after care of trees for different purposes/.

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Paper –IV

### Plant Pathology (Microbiology and Virology)

M.M.: 50

Theory

Definition of Microbiology (Mycology, Bacteriology and Nematology)

- 1. Mycology:**
  - (i)** Fungal Thallus, reproduction, Dissemination and recent classification.
  - (ii)** Study of Morphology and life history of the following Genera: Pythium, Phytophthora, Albugo, Peronospora, Sclerospora. Mucor, Rhizopus, Aspergillus, Penicillium, Erysiphe, Ustilago, Puccinia, Melampsora, Agaricus, Alternaria, Helminthosporium, Cercospora, Piricularia, Colletotrichum and Fusarium.
- 2. Bacteriology:** Distribution, Morphology and reproduction; Classification with reference to agricultural importance (causing diseases in plants Role of Azotobactor & Rhizobium bacteria in crop production.
- 3. Virology:** Plant Viruses, nature, properties and their transmission.
- 4. Nematology:** Morphology of Phytonematodes and their classification.
- 5. Elementary knowledge of Mycoplasma.**
- 6. Elementary knowledge of plant Mocrotechniques.**

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**Paper –V**

**Milk and Milk Products**

M.M.: 50

**Theory**

**Milk**

Elementary idea of milk secretion, colostrums, its nature and properties, composition, physical properties and food value of milk, factors influencing the quality and quantity of milk produced PFA specifications for different milks. Production of clean milk, Adulteration of milk and its detection.

**Milk Processing**

Receiving of milk in dairy, straining, filtration, clarification, standardization, cooling, pasteurization, sterilization and homogenization, packaging and distribution of milk, Cleaning and sanitization of dairy equipments and Machinery, Elementary idea of metals used in dairy utensils.

**Milk Micro-Organisms**

Types of micro-organism in milk Sources of contamination, tests employed to ascertain the quality of milk and various quality control measures. Germination in milk.

**Milk Products**

- (i) **Cream:** Composition of cream, different methods of cream separation, factors affecting the richness of cream and essentials of successful cream

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separation. Objects of ripening, Natural cream ripening and ripening with starters; neutralization of cream for butter making.

- (ii) **Butter:** Composition of butter, making of butter from ripened cream, sweet cream and whole milk. Factors influencing churning. Judging of butter, Common defects of butter and their causes, factors influencing the quality and composition of butter.
- (iii) **Ghee:** Manufacture of Ghee from cream and butter, composition factors affecting the quality of ghee. AG marking of ghee.

### **Frozen and Fermented Milk Products:**

Classification of Ice-cream, Role of ingredients. Standardization and manufacture of ice-cream, Defects in Ice-Cream, Marketing of ice-cream, Manufacture of fermented milk products such as Dahi, Cultured butter milk and Yoghurt.

Indigenous Milk Products: Manufacturing techniques of various indigenous milk products, such as chenna & Paneer, Khoa, Rabbari.

## **Paper –VI**

### **Agronomy (Crop Production and Farm Management)**

M.M.: 50

#### **Theory**

(A) Study of the following crops with special reference to U.P.:

1. Cereals: Wheat, Paddy, Barley, Maize, Jowar, Bajra, Maize Jowar, Bajra and smaller millets.
2. Fodder Crops: Oat, Berseem, Lucerne, Napier, Sudan grass and Dinanath grass.
3. Fibre Crops: Cotton, Jute and Sunnhemp.

(B) Farm Management:

1. Principles underlying successful management of Farms maintained for profits, Experiments and demonstration.
2. Farm layout and cropping scheme General survey of land, layout of fields, Roads, Buildings, Irrigation and Drainage Channels and fencing; Cropping scheme for various agro-climatic conditions.

## **Paper –VII**

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### Extension Education & Rural Development

M.M.: 50

#### Theory

1. Extension Education: Meaning, objectives, principles and philosophy. A historical review of review of extension movement in Indian particularly at Sri Niketan, Sevagram, Etawah and Marhandam. A brief review of extension work in U.S.A.
2. **A Extension Methods:** Definition, importance and selection, Methods of approach individual, group, community and mass.  
**B Extension Techniques:** Demonstration particularly method demonstration, Result demonstration, Group discussion and Audio-Visual Aids.  
**C Extension Teaching and Learning:** Meaning, objectives, Principles, importance and factors affecting teaching and learning process, learning situation and experience motivation.
3. The Role Qualifications, responsibilities and relationship of professional extension workers at various levels.
4. Community Development and Panchayati Raj: Definition, objectives of community Development, A brief study of panchayati Raj, I.R.D.P., Trysem. T & V system and transfer of Technology (National demonstration, operational research project; K.V.K. and Lab to Land programme).
5. Programme Planning: Meaning, importance, Principle, steps and procedure in developing a sound extension programme, seeking co-operation or local leaders.
6. Extension Evaluation: Meaning, definition purpose, methods, types and steps in evaluation.