VBS Purvanchal University
Jaunpur

Syllabus B.Sc. Ag.

The examination shall consist of seven theory papers (each of 3 hours duration and carrying 50 marks) and one practical examination on each of the theory paper, carrying 50 marks.

Part-I

Theory
Paper –I

Agricultural Statistics and Mathematics

M.M.: 50

Statistics:

1. **Frequency Distribution**: Classification; Tabulation; Diagrammatic Representation and Graphic Representation of data: Histogram, Frequency Polygon, Frequency curve and ogive.
2. **Measures of Central Tendency**: Mean, Mediom, Mode, Measures of Dispersion: Range, Mean deviation: Variance. Coefficient of variation and Standard error of mean.
3. **Correlation and Regression**: Meaning of correlation, Type of correlation, Karl Pearson Coefficient of correlation, Limits of correlation coefficient, Rank Correlation, Regression, Lines of regression, Regression Coefficients, Properties of regression coefficient, Angle between two lines of regression.
4. **Test of Significance**: Concept of random sample and Statistics; Test of Significance based on Z, t, F and Chi Square Statistics.
5. **Analysis of Variance**: Analysis of Variance with equal number of observations per cell in one and two way Classification; General and Basis Principles of Experimental Design: C R D R B D and L S D.

Mathematics:

1. **Algebra of Matrices** : Elementary concept of determinants, Minor and co-factor of determinants, Properties of determinants, Definition of Matrices, Types of Matrices and Properties, Addition, Subtraction, Multiplication and inverse of Matrix.
2. **Differential Calculus**: Definition of variable and constant Limits, Differentials of Simple Functions, Product and division of two functional Function of a function.
3. **Integral Calculus** : Integration of Standard Forms, Integration of Substitution in Simple Cases, Integration by parts and concept of Definite integrals (Simple cases)

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Paper –II

Plant Structure, Function and Crop Systematics

M.M.: 50

1. Plant Cell, Structure and function.
2. Tissues and tissue Systems.
3. Internal anatomy of roots, stems and leaves.
4. Secondary growth; Secondary growth in dicot-roots, dicot-stems and monocot stem-
5. Osmosis, diffusion, absorption and loss of water in plants.
6. Plant nutrients and their deficiency symptoms.
7. Respiration: Aerobic and anaerobic respiration; factors affecting respiration.
8. Photosynthesis: Mechanisms and factors affecting photo-synthesis.
9. Plant hormones, Dormancy, Vernalization and Photo-periodism.
10. Distinguishing features of the following families with special reference to the genera mentioned against them-

A. Families of Monocot:

(i) Araceae; colocasia.
(ii) Graminae; Triticam, Hordcum, Oryza, Zea, Sorghum, Pennisetum.

B. Families of dicot:

(i) Leguminosac; Pisum, Cicer, Crotalaria, Cajanus, Arachis.
(ii) Cucurbitaceae; Luffa, Lagenaria.
(iii) Convolvulaceae; Ipomoea, Cuscuta.
(iv) Solanaceae; Solanum, Nicotiana.
(v) Euphorbiaceae; Ricinus.
(vi) Linaceae; Linum.
(vii) Pedaliaceae; Sesamum.
(viii) Compositae; Carthamus.
(ix) Tiliaceae; Carthamus.
(x) Tiliaceae; Carehorus.
(xi) Malvaceae; Hibiscus, Gossypium.

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Paper –III

Livestock Production and Management

M.M.: 50

Theory

Breading: Aims of Breeder, Mendalian rules and its importance in live stock improvement, Heredity and variation, Elementary idea of essential and accessory organs of male & female reproductive system in different farm animals. Mechanism of gametogenesis and oestus in farm animals. Methods and systems of breeding in farm animals, their merits and demerits. A.I. and its importance in improvement of farm animals. Selection methods, sire indexing, Cattle breeding problems in India and work sofar done in this direction.

Feeding: Elementary idea of digestive system of ruminant and non-ruminant farm animals. Animal feeds and their classification. Evolution of feeding standards, Modern feeding standards, their merits and demerits and applicability under Indian conditions. Ration and its kind, Principles of rationing, Characteristics of ideal ration, food requirements for growth, reproduction, pregnancy, milk work and wool production in farm animals. Calf feeding schedule and feeding of crossbred cows. Principles and methods of fodder preservation-Hay and Silage making.

Management:

(a) Building: Location and grouping of different dairy farm buildings and sheds. Requirement and arrangement of floor space in various dairy farm buildings.

(b) Fodder requirement of a dairy farm and cropping scheme for the supply of succulent fodders through out the year. Pasture land and their management, Land & labour requirements for a dairy farm, Maintenance of different essential dairy for registers, purchase and culling of dairy cattle.

(c) Animal Health & Hygiene: Symptoms of ill hearth, Principles of immunization, first aid in farm animals. Sterility in farm animals. Simple obstetrics in farm animals such as abnormal parturition. Retention of placenta, Prolapse of uterus, milk fever, Tympanitis, Impaction of rumen. Elementary idea about poisoning in farm animals. General measures for prevention and control of infections and contagious diseases, care of down calvers and newly born calf.

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Paper –IV

Agronomy (Principles of Crop Production)

M.M.: 50

Theory

1. Scientific Principles involved in adoption and distribution of crops and their varieties: classification of crop rotation and cropping scheme.
2. Tillage: Definition, Objects, Types, advantages and disadvantages of tillage; time and depth of ploughing; modern concept of tillage.
3. Soil Management and crop Production in Problematic Soils: Soil fertility and productivity, Soil sickness, principles of good soil management of saline alkali soils; dryland farming; crop production on eroded and waterlogged soils.
4. Manures and Fertilizers: Essential Plant nutrients, criteria of essentiality, role of essential plant nutrients; classification of manures and fertilizers, principles of manuring (fertilizer application) with special reference to dose; source, time and method of fertilizer application, fertilizer use efficiency (F.U.E) and factors affecting it; evaluation of manures and fertilizers.
5. Irrigation and Drainage: Irrigation and water requirement of crops, time and methods of irrigation, harmful of excess of soil water and methods of drainage.
6. Harvest and Post-Harvest Technology: Harvesting processing, storage and marketing of produce.

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Paper –V

Agricultural Engineering

M.M.: 50

Theory

Unit-I

1. **Introduction:** Definition, branches and objects of agricultural Engineering, Role of Agricultural Engineering in agro-Rural Development.
2. **Surveying:** Objectives, Uses and types of surveying, methods of measuring distances, Ranging, Method of chaining on level and sloppy grounds, Errors in chaining and their correction, Laying out right angles with chain or tape, cross-staff and optical square. Conventional symbols, chain surveying, obstacles in chaining, cross staff survey, prismatic compass survey, Booking field notes and their plotting with different methods of surveying, calculation of areas.

Unit-II

3. **Levelling:** Definition of different leveling terms: Kinds of Levels, Dumpy level, its parts, principle of operation and various adjustments, Simple leveling Differential leveling, Methods of calculating reduced levels, contouring, characteristics of contour lines, use of contour maps by grid system.

Unit-III

4. **Irrigation:** Necessity and advantages of Irrigation, Sources of Irrigation water, Units and methods of measurements of irrigation water.

   Method of water application on the field, flooding, Border, checkbasin, Furrow, Sprinkler and Drip method of irrigation**.**

   Infiltration, evaporation, Transpiration consumptive use, soil-water relationship. Kinds of soil water, Movement of water in the soil, Soil moisture measurement by tensiometer and gypsum, Frequency of irrigation and irrigation efficiency.

5. **Drainage:** Necessity and scope of drainage, Drainage properties of soil, Benefit of drainage, type of land requiring, drainage planning a field drainage system, Drainage coefficient.

Unit-III

6. **Centrifugal Pump:** Principle of operation, Parts, classification, selection and installation, Advantages and disadvantages of centrifugal pumps troubles and their remedies, Power requirement and efficiency of the pump.

Paper –VI

Agricultural Chemistry
(Soil Science, Fertilizers and Manures)

M.M.: 50

Theory

Soil Science

Pedological and Edaphological concepts of soil, Soil forming Rocks and Minerals. Weathering of Rocks. Factors of Soil formation. Soil Profile.

Texture and structure of soil. Soil components. Soil colloids. Soil water, Soil organic matter. Humus and Humification. Nitrogen, Phosphorus and Potash transformations in soil. Exchange Phenomenon.

Soil reaction. Acid and Alkali soils, their formation and reclamation, Indian soils, U.P. soils in particular. Soil Micro-organisms and their role in soil fertility.

Fertilizers and Manures:

Plant Nutrients and their role. Fertilizer, their classification and principles of their application. Organic manures. Compost and composting Radio Active Isotopes and their use in agriculture.

Chemistry and use of common weedicides, insecticides, fungicides and Rodenticides.

Paper –VI

Agricultural Economics

M.M.: 50

Theory

I. Economics Considerations: Definition of Economics. Definition and Scope of Agricultural Economics. Significance of Agricultural in Economic Development.

II. Element of Price Theory:

1. Theory of Demand: Demand, Supply and Market Price: Price elasticity, Utility Analysis of Demand, Indifference curve analysis.
2. Theory of Firm: The Firm and its decision. Theory of Production, Choice of input and output. Cost Functions.
3. Pricing of output: Pricing of output under pure competition, monopoly, Oligopoly and Monopolistic Competition.
4. Theory of Distribution: Determination of Rent and Wages.

III. Money and Banking: Meaning of significance of money, Value of money, Inflation and deflation, Money standards; Credit and Credit Instruments, Bank their functions and classifications, Commercial Bank, Central Banking.

IV. Farm Management: Field of farm Management, Economics Principles of Farm Management, Farm Planning and Budgeting, Farm Records and Accounts Measures for Farm Income and Efficiency.