VBS Purvanchal University
Jaunpur

Syllabus B.Sc. Ag. Part-III

Paper –I

Soil and Water Conservation Engineering

M.M.: 50

Theory

1. **Hydrology**: Hydrologic cycle its components: occurrence and forms of precipitation. Characteristics of rainfall in India. Rainfall Intensity; sources of precipitation; Water, Air masses, Air fronts and their types: storms-type and patterns.

   Measurement of rainfall by recording and Non-recording type rain gauges methods of computing average rainfall by arithmetic mean and thiessen polygon methods. Recurrence Interval.
2. **Runoff:** Definition, phenomena & forms of runoff, characteristics of runoff, factors affecting runoff, time of concentration and its impact on runoff estimation of peak runoff rate by rational equation.
3. **Soil Erosion**: Geological and accelerated erosion, mechanics and type of water and wind erosion, factors affecting rate of erosion. Damages caused by erosion. Extent of erosion problems in U.P. India.
4. **Soil and Water Conservation**: Definition and aim of soil and water conservation in agriculture soil conservation survey and land use capability classification.
5. **Erosion control by Agronomic practices:** Crop classification based on soil conservation value; contouring, strip cropping cover cropping conservation crop rotation; Ley farming mono culture mixed cropping and conservation farming.
6. **Mechanical and Engineering Measures for Erosion Control**: Elementry idea of conservation tillage, mulck tillage, Basin listing: sub soiling; field bunding; contour bunding; graded bunding. Ridge & channel Terracing and Bench terracing contour trenching & stone terracing and their specifications.
7. **Wind Erosion Control:** Principles vegetative and Mechanical practices, Stabilization of sand dunes.
8. **Cully Erosion Control**: Types of gullies: Principles of prevention and control of gullies; stabilization of Gullies Diversion (peripheral) bunds and ditches.

   Elementary knowledge of earthen check dams, woven wire check dams; Brush dams, Loose rock dams; log and plank dams, straight drop spillway, drop inlet spillway and chute spillway.
9. **Grassed Waterways**: Uses Design, cross sections, Grasses for waterways; construction establishment of grasses in waterways; maintenance.
10. **Water Conservation Reservoirs**: Type and uses; site selection, storage capacity of farm ponds, seepage control and maintenance.
11. **Flood Control**: Type of floods; damages caused by floods, elementary idea of head water flood control methods.

12. Land Grading and Land Levelling: Factors affecting, planning and survery, methods and calculation of quantity of earth work and cost involved in land leveling contour and its characteristics contour survey and uses of contour map of the area.

Paper –II

Agronomy
(Crop Production and Field Experimentation)

M.M.: 50

Theory

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

1. Pulses: Arhar, Gram, Moong, Urd, Peas, Lentil, Cowpea, Soybean.
2. Oil Seed: Mustard, Groundnut, Linseed, Sesame, Sunflower & Castor.
3. Special Crops: Sugarcane, Potato, Tobacco.

(B) Field Experimentation: Objects & Principles of field experimentation study of C.R.D., R.B.D., L.S.D. and Split Plot Designs.

Paper –III

Horticulture
(Olericulture and Floriculture)

M.M.: 50

Theory

A. Olericulture

Importance of vegetable in human nutrition and as a source of income to the grower; Classifications of vegetable crops; type of vegetable gardening. Role of plant nutrients and growth regulators in Vegetable production; Nursery techniques, dormancy of seeds. Preparation of land, Manures of fertilizers and methods of their application; Spacing transplanting, irrigation, interculture, mulching, crop rotation, succession and intercropping, Harvesting, grading, packing, transport, marketing and storage; vegetable forcing, vegetable seed production, Hardening of seedling.

Cultivation of important Vegetables belonging to the different groups such as: Leafy vegetables (Palak, Amaranthese and Lettuce) Root Vegetables (Radish, Carrot, turnip, beet root), Solanaceous fruits (Tomato, Chilli, Brinjal) Cucurbits (Bottle gourd, Luffa, Bitter gourd, Pointed gourd, cucumber, Muskmelon).Cole Crops-(Cabbage, Cauliflower, Knol-khol) Bulb Crops (Onion, Garlic). Potato, Bhindi, Pea, Beans.

B. Floriculture:

Importance and scope of floriculture in India; Importance, General description, cultivation and uses of annuals, biennials; perennials and bulbous plants; Classification and cultivation of Ornamental trees, Shrubs, succulents, ferns, palms and foliage plants; care and maintenance, Bonsai, flower shows, judging and flower arrangements, Selection of site and layout for private and public gardens. Origin, Classification and cultivation of following commercially important flower crops like Rose, Canna, Chrysanthemum and Dahlia; Making and maintenance of Lawns.

Paper –IV

Agriculture Chemistry
(Chemistry of Milk and Animal Nutrition)

M.M.: 50

Theory

Chemistry of Milk:

Milk constituents and their phasic distribution. Milk Lipids and their chemistry, Milk fat: saponifiable and non-saponifiable, Gat constants, Rancidity and its control. Milk sugars and their chemistry. Milk proteins and their Chemistry: Composition and separation. Minerals of milk, Enzymes and other substances of milk, carboxylic acids, esters and nonprotein nitrogenous substances. Detection of adulteration in milk and ghee. Use of preservative and their detection. Chemical changes during preservation of milk and milk products.

Animal Nutrition:

Composition of animal body, composition and classification of feeding stuffs, Digestion and absorption, Minerals and mineral metabolism. Carbohydrate metabolism: hormonal control of carbohydrates metabolism. Fat metabolism. Essential fatty acids, Protein and amino acid metabolism. Biological value of protein and energy values of feeds.

Paper –V

Plant Pathology
(Plant Disease and Their Control)

M.M.: 50

Theory

1. Scope of Plant Pathology in Agriculture.

2. Plant diseases, their causes and classification, General Symptoms of Plant diseases and Epidemiology.
3. Study of the following Plant diseases with reference to their symptoms, etiology mode of perpetuation and control: - Damping-off seedling. Late blight of Potato. White rust of crucifers, Green-ear disease of Bajra, Downy mildew of pea. Powdery mildew of wheat. Loose smut of wheat, Covered smut of Barley, Grain Smult of Jowar, Smut of Bajra , Black Stem rut of wheat, Yellow or stripe Rust of Wheat, Brown or leaf rust of wheat, Linseed Rust, Early blight of Potato, Tikka disease of ground nut, Stripe disease of Barley, Blast disease of Paddy, False smut of paddy, Redrot of Sugar cane, wilt of Arhar (pigeon pea) Bacterial blight of Paddy, Citrus Cankar (Bacterial) Tobacco & Potato mosaic (Virus) Rootknot of vegetable (nematodes) Black tip of Mango (Physiological), Little leaf of Brinjal mycoplasma.
4. Phanerogamic plant parasites-Cuscutta, Loranthus, Orobanchy & Striga.
5. Deficiency disease-khaira disease of Paddy.
6. Concept of integrated Plant disease management.

Paper –VI

Agricultural Entomology

M.M.: 50

Theory

A. General Entomology
   1. General introduction of Phylum Artropoda, their various classes as distinguishing Characters with particular reference to class insects.
   2. Insect Morphology
      (a) Body Wall
      (b) Body Divisions
         (i) Head: Structure and their appendages; structure, functions and modifications of antenna; study of mounthparts (cutting and chewing, Piercing and sucking, sponging, siphoning; Chewing and Lapping.)
         (ii) Thorax: Its structure and appendages: Structure and function of legs. Wings, wing coupling apparatus and wing venation.
         (iii) Abdomen: Segmentation and external genetalia of male and female with special reference to grasshopper.
   3. Anatomy: Digestive, excretory, respiratory, Circulatory nervous and reproductive systems of grasshopper.
   4. Post embryonic development of insects.
   5. Taxonomy: Insect classification upto the level of families of agricultural importance.
      Orphoptera : (Acrididae)
      Isoptera : (Termitidea)
      Hemiptera : (Coreidae, Phrrhocoreidae, Pentatomidac and Lygacidae)

Homoptera : (Fulgoridea, Aleurodidae, Jassidae, Aphididae, Coccidae and Lacciferidae.
Coleptera : Dermestidae, Coccinellidae, Bruchidae, (Larridae), Chrysomelidae, Curculionidae, Scarabidae and Cicindelidae.
Hymenoptera: Apidae Tenthredinidae, Braconidae, Ichnumonidae and Trichogrammatidae.
Lepidoptera : Pylalidae, Noctuidae, Cymbidae and Bombycidae.
Diptera : Trypetidae and tachnidae.

B. Economic Importance of Insects.

Classification, Economic-status, food plants, damage, life history and pest management of the following insect posts in U.P.

Order-Orthoptera : Paddy grasshopper (Hieroglypus spp.)
Order- Isoptera : Terimites (Odontotermesobesus)
Order-Hemiptera : Bagrada cruciferarum, Leptocorisa varicornis, Ideocerus supp., Pyrilla spp. Aleurolobus barodensis, Drosicha mangiferae, Lipaphs erasimi, Dysdercus koengei.
Order-Lepidoptera: Heliothis armigera, Agotis spp. Earias spp. Papileo demoleus, Emmalocera depressella, Tryporizanivella, Sitotroga cerealella, Gnorimosehema aperculella Sylepta derogate, Pectinophora gossypiella, Chillopartellus, Mythimna separate. Ezophera perticella.
Order-Coteoptera : Raphidopulpa (Aulacophora) fovicollis, Bruchus spp., Sitoppilus oryzae, trogodermagranarium.
Order-Fiptera : (Strumata) Dacus cucuritae, Agromyzaobtuse.
Order-Hymenoptera: Athalia proxima.
Beneficial Insects : Elementary knowledge of Silkworm, Honeybee, Lac Insects, Parasites and Predators.

Principle of Insect pest Management: Elementary knowledge about pest management

(a) Natural Control
(b) Applied control (chemical control, Physical and mechanical control, Biological control and Integrated pest management)
(c) Elementary knowledge about the structure and functioning of common sprayers, dusters, mist blowers and fumigators.

Paper –VII

Principles of Genetics

M.M.: 50

Theory

1. Genetics: A brief, history, sexuality in plants and micro-organisms.
2. Cell division: Mitosis and meiosis.
3. Nucleus and nucleolus; structure and function, Prokaryotic Nucleotides, chromosome structure and function.
4. Mendel's Laws of inheritance; Mendel's method, Law of segregation and Independent Assortment. Modification of Mendelian ratios, Lethal factors.
5. Multiple factor inheritance, multiple alleles, cytoplasmic inheritance.
6. Linkage and crossing over, Sex determination and sex linage, sex-limited and sex-influenced characters.
7. Synthesis of protein and gene, Genetic code.
8. Mutation and chromosomal aberration, Role of chromosomal aberration.